OCTOBER, 1942

Rock Products

THE INDUSTRY'S RECOGNIZED AUTHORITY

B&W PULVERIZERS

. . . aid in getting cement to the front line of Industry

High availability is now one of the most important factors in the war effort — whether in man power, machine tools, ships, or pulverizers.

B&W Pulverizers, with a high availability record, are now definitely helping cement men to attain maximum output.

C-49.

BABCOCK & WILCOX

THE BABCOCK & WILCOX COMPANY

85 LIBERTY STREET, NEW YORK, N.Y.

C18 3109

LUDLOW-SAYLOR

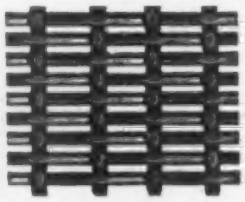
CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

for super-severe service

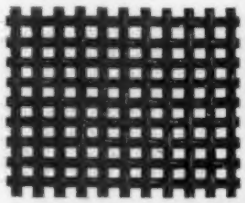
SUPER-HARD, SUPER-TOUGH, SUPER-STRONG

CONTROLLED-TEMPER SUPER-LOY WOVEN WIRE SCREENS

withstand abrasion longer —
endure vibration better —
resist fatigue to the utmost



REK-TANG
long-slot weave



DOUBLE-CRIMP
square-mesh weave

The background at top of page shows the "Perfect" Double-Crimp Weave.

The small cuts in the center panel compare REK-TANG Weave and Double-Crimp Weave.

The border at foot of page shows "Perfect" Double-Crimp Steel Wire Cloth which has been hot-dip galvanized after weaving.

Samples on request.

The LUDLOW-SAYLOR WIRE COMPANY
SAINT LOUIS

OCT 13 1942

©CIB 561096

COMING UP!

FOR YOUR CONSIDERATION

Make a note of this: EASTON has designed a new large capacity back-mounted body for open pit mining of iron ore. Six of these big side-dump Diesel-powered units will soon start hauling 30-ton loads uphill against a 10 percent grade.

An interesting feature is the dumping arrangement which our artist has visualized above. An EASTON overhead hoist is used. It works automatically by remote control. Two balanced hooks engage lift-bars on the side door. The door is raised until it is in a straight line with the hoisting cable. Then it becomes part of the bail for dumping and the body is raised to discharge position. While heavy chunks of ore might injure the operating mechanism of an automatic door, the simple arrangement used here lifts the door high out of harm's way and high enough to pass the largest piece of ore that might be loaded into the 16-yard body by the 4-yard shovel.

When the body is dumped, EASTON patented stabilizer feet, or outriggers, rest on the crusher-hopper wall. They absorb the shock and protect the truck chassis and springs from injury as the 30-ton load slides into the hopper.

Someday, perhaps sooner than you think, haulage is coming up for consideration at your operation. As demands increase, haulage routes lengthen, and old equipment completely outlives its usefulness, you'll want *more tonnage, faster, at lower cost.* That's why it will pay you, now, to consult EASTON and let our engineers make a free survey of your requirements. If you need, right now, new equipment which is necessary to *your* war effort, let EASTON help you to cut through Washington red tape and get it. Write to: Engineering Counsel, Easton Car & Construction Co., Easton, Pa. B-1000

EASTON

INDUSTRIAL CARS
TRUCK BODIES · TRAILERS
ELECTRIC LIFT TRUCKS

Rock Products

Recognized the World Over as the Leader in Its Field

With which have been consolidated the journals *Cement and Engineering News* (founded 1896) and *Concrete Products* (established 1918)

VOL. 45, No. 10, OCTOBER, 1942

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ROCK PRODUCTS Bears the Twin Hall-Marks of Known Value.

Audit Bureau of Circulations — Impartial measurement of reader interest in terms of paid circulation.

ABP — Authentic facts relating to editorial scope and readership analysis.

(PUBLISHED MONTHLY AT CHICAGO, ILL., U. S. A.)

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Left—Three bad conditions: mine water flowing down the belt, poor protection from weather, poor decking over return belt.

Below—Better practice: even loading, return belt well protected.

WAR on *Wear!*

MANHATTAN'S suggestions for the care of CONVEYOR BELTS

THE tougher the rubber situation—and it will be worse before it gets better—the more imperative it is to make the conveyor belts you now have last longer, carry more. Here is the strategy for your war on wear.

1. Make sure idlers are in good condition, turn freely and are so lubricated that oil and grease will not get on belt.
2. Avoid long feeding drops for heavy materials. Install retarding devices or redesign feed chutes.
3. Load evenly and centrally to distribute wear over entire surface. Irregular, uneven or heavy loading causes spillage, tends to make belt run crooked.
4. Hard pieces of material passing between tail pulley and belt will damage belt. Install tight decking over return belt, especially at feed point.
5. Load to capacity, but don't overload nor overspeed. Regulate speed to prevent cover wear. Empty belt before stopping.
6. Don't use guide idlers. Crooked running belts should be cut and accurately respliced, idlers aligned and the feed made central.
7. Use lagging on drive pulley to reduce belt tension.
8. Slide, don't drop, material on belt, through a notched opening or over a coarse screen or grating in chute so fines will cushion the lumps. Don't let lip of chute touch belt.
9. Keep belts and pulleys clean.
10. Keep end pulleys and idlers in alignment to prevent belts running crooked.
11. House belts to protect them from sunlight, excessive heat, cold and moisture, and to make repairs and inspections easier.
12. Inspect belts and idlers regularly and make necessary belt and splice repairs promptly. Keep belt tension low.
13. On belts under high tension use vulcanized field splices. When metal fasteners are used select correct size for the end pulleys.
14. Gravity take-ups, mechanical feeders, large end pulleys and careful, frequent inspection and maintenance prolong the life of conveyor belts.
15. Consult your MANHATTAN service man.

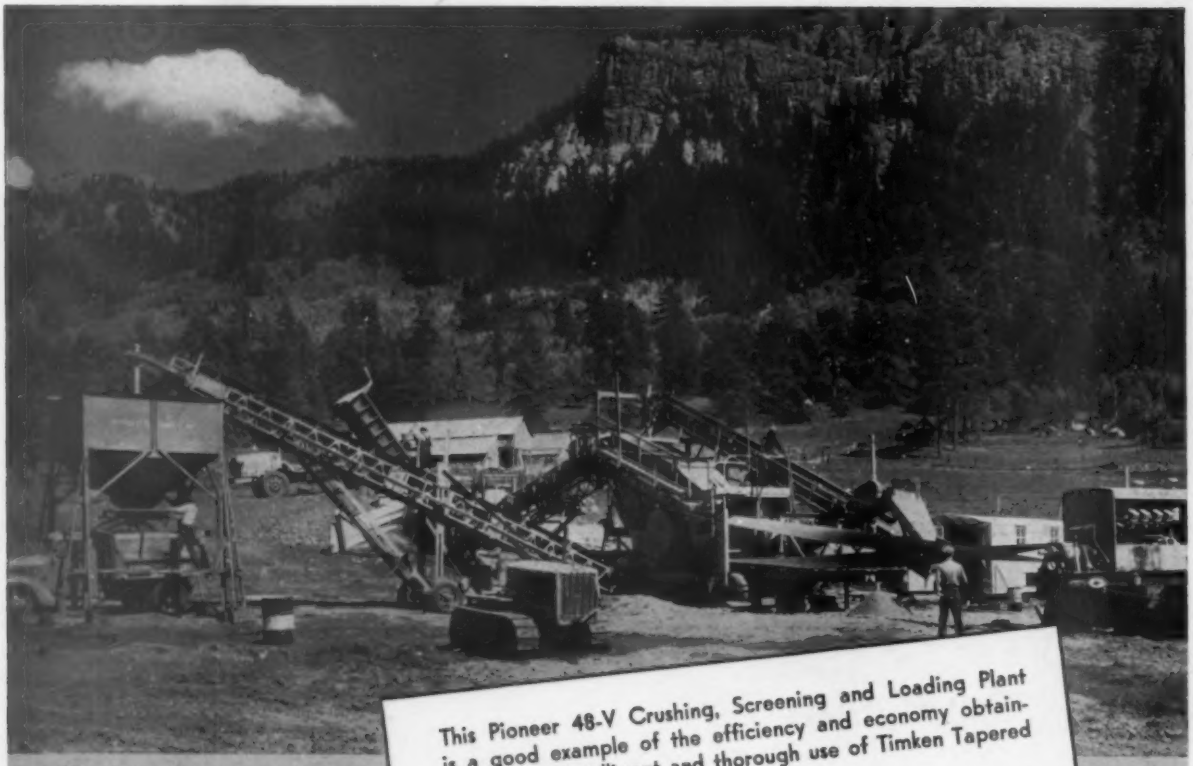
Copies of these instructions are available on wall cards for your maintenance department (also on the care of Transmission Belts, V-Belts and Hose). Write for any you want and wage war on wear.

KEEP AHEAD WITH

MANHATTAN

THROW YOUR SCRAP INTO THE FIGHT!

THE MANHATTAN RUBBER MANUFACTURING DIVISION
of RAYBESTOS-MANHATTAN, INC.
EXECUTIVE OFFICES PASSAIC, NEW JERSEY



Manufactured by Pioneer Engineering Works, Minneapolis, Minn.

Wheels And Shafts Are Turning For Victory On Timken Bearings. They'll Help Protect Prosperity Afterwards.

This Pioneer 48-V Crushing, Screening and Loading Plant is a good example of the efficiency and economy obtainable by the intelligent and thorough use of Timken Tapered Roller Bearings.

There are 342 Timken Bearings in the complete equipment, every vital point of friction and hard service being thus protected. The list of bearing applications is as follows:

40" x 22" Roll Crusher Shaft	8
Roll Crusher Countershaft	4
Main Feeder Conveyor	80
Portable Loading Conveyor	80
Long Return Conveyor	78
Short Return Conveyor	58
Chain Idlers	12
Belt Idlers	6
Crushing Plant Wheels	12
Loading Conveyor Wheels	4

This plant is owned and operated by Larson Construction Company, Denver, Colorado.

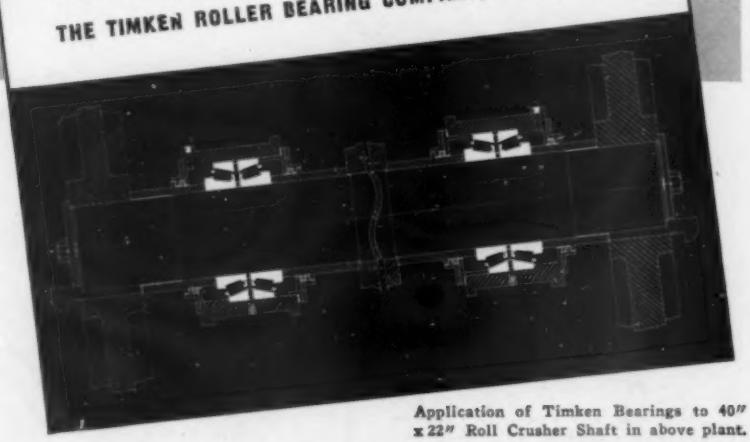
THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

Manufacturers of Timken Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; Timken Alloy Steels and Carbon and Alloy Seamless Tubing; and Timken Rock Bits.



Application of Timken Bearings to 40" x 22" Roll Crusher Shaft in above plant.

Finer CRUSHING Greater OUTPUT

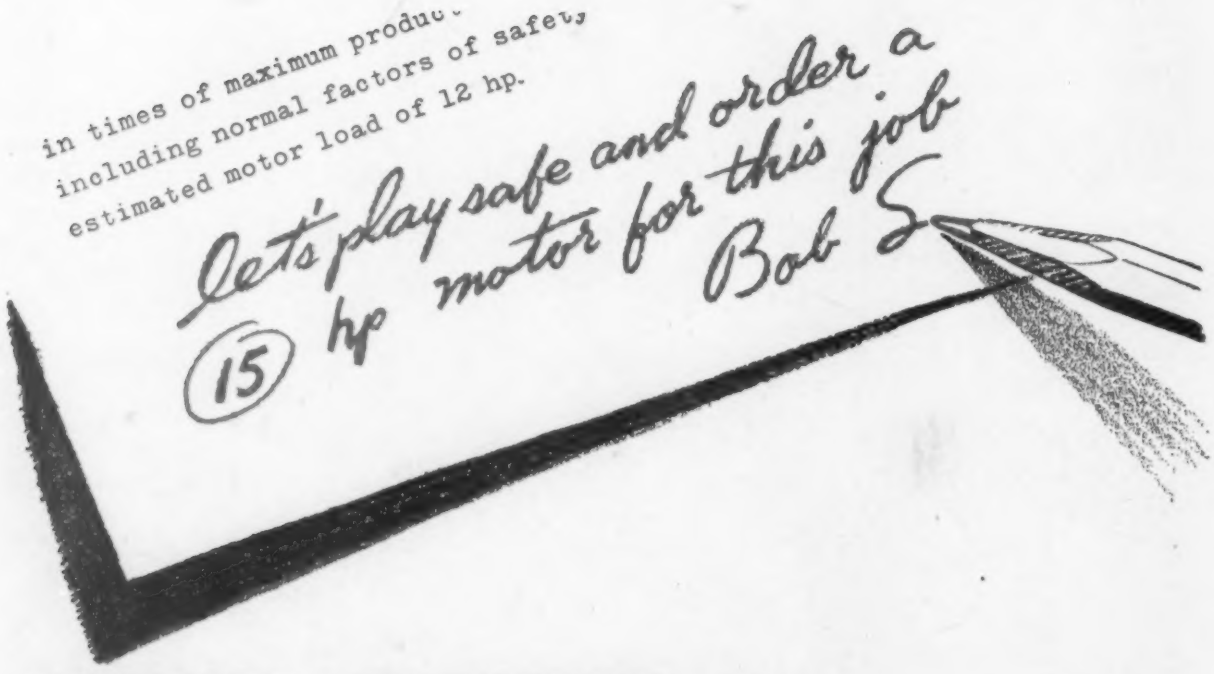
Many plants engaged in the production of crushed stone, gravel, slag and various industrial minerals are handicapped due to the inability to produce the more finely crushed sizes in sufficient quantity to meet today's emergency demands. Where such conditions prevail, the answer will be found in the installation of a Symons Cone, the Crusher now serving most modern crushing plants engaged in fine crushing operations.

If you require greater output of more finely crushed materials, follow the example of the leaders in the industry who are users of Symons Cone Crushers.

We are proud to serve our country in the production of war materials, and to have been awarded the Navy "E" for EXCELLENCE.

NORDBERG MFG. CO.
MILWAUKEE · WISCONSIN
NEW YORK · LOS ANGELES · LONDON · TORONTO

SYMONS CONE CRUSHERS


in times of maximum produc-
including normal factors of safety
estimated motor load of 12 hp.
let's play safe and order a
15 hp motor for this job
Bob S

GENERAL ELECTRIC asks:

"Will you help save 25% in critical materials by modifying your peacetime motor policy?"

IN PEACETIME, your engineers as well as our own have generally advocated motors having a generous capacity for the job. Such "overmotoring" was then justified as a safety factor to take care of unexpectedly heavy loads, and as a means of extending motor life to 20 years, say, instead of 10.

But today, every pound of steel, copper or aluminum tied up by the use of motors needlessly large for the job is one less pound to help beat the Axis. You can help save these materials by selecting motors strictly on the basis of the ***actual expected*** load, without additional safety factors. If in doubt, do not select arbitrarily the "next larger rating." Often, the "next smaller rating" will handle the job satisfactorily.

Because of better design modern motors are considerably lighter than those of a few years ago, but they are just as ***conservatively rated***. This means that a margin of safety to meet reasonable overloads has already been "figured in" by the manufacturer. When another safety margin is allowed by the buyer, needless overcapacity is the result.

Why not check with your engineers to see if your motor specifications can be modified in the cause of conservation? You'll be helping to get more motors into war production, and make more metals available for winning the war. ***General Electric Company, Schenectady, N. Y.***

The Navy "E", for Excellence, has been awarded to 92,780 General Electric employees in five plants manufacturing naval equipment.

STANDARD G-E MOTORS ARE GENERALLY AVAILABLE WITHOUT DELAY FOR WAR JOBS

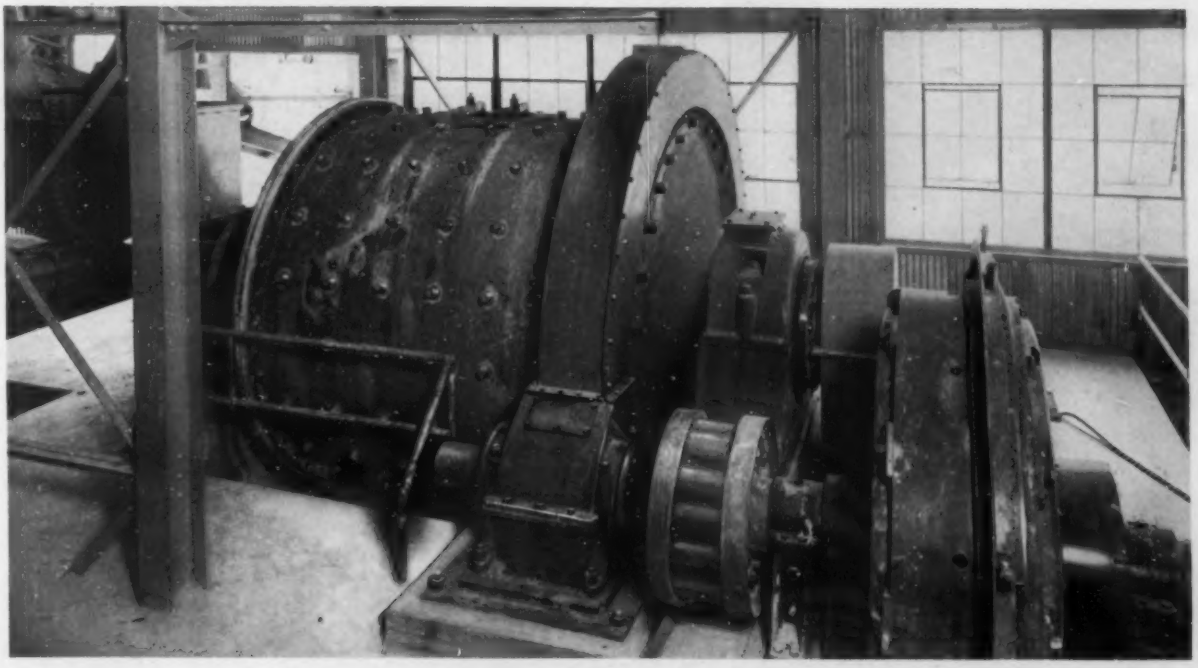
BUILDER OF TRI/CLAD MOTORS
REG. U.S. PAT. OFF.

GENERAL ELECTRIC

750-163-8080

LET'S MAKE EVERY MAN-HOUR OF WAR EFFORT PRODUCE MAXIMUM RESULTS

TRAYLOR
GRINDING MILLS



WE BUILD

Rotary Kilns
Rotary Coolers
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Scrubbers
Evaporators
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Gyratory Crushers
Reduction Crushers
Crushing Rolls
Grinding Mills
Ball Mills
Rod Mills
Tube Mills
Pug Mills
Wash Mills
Feeders
Rotary Screens
Elevators

"Way back when" the advantages of ball milling began to be appreciated, we built the first Traylor Ball Mill. It wasn't a very large mill and, in common with every one else, we didn't know very much about ball milling. But our engineers studied the subject, and have studied it ever since, from our own angle, as well as that of the operator,—particularly the latter. So, whenever you see "Traylor" on the name plate of a Grinding Mill, you'll know that it is the ultimate in efficiency, because WE KNOW exactly what the job consists of that it has to do, and we have designed and built it to function at the most economical cost, for both power and maintenance.

All of our good friends and customers know this, and many of them have shown their appreciation in the most practical way possible,—and most satisfactory to us,—by "build us more of the same." Plenty of these friends are "big boys," too, in the chemical, metallurgical, lime making and cement manufacturing industries, whose engineers sure "know their stuff," and are very particular as to what they recommend.

Follow the example of these leaders! Bring your problems to our engineers. They enjoy working them out, and besides that's exactly what we are paying them to do. Have one of them call to talk things over.

Write for Bulletin 2103

TRAYLOR
ENGINEERING & MANUFACTURING CO.
MAIN OFFICE AND WORKS — ALLENTOWN, PENNA., U.S.A.

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1742

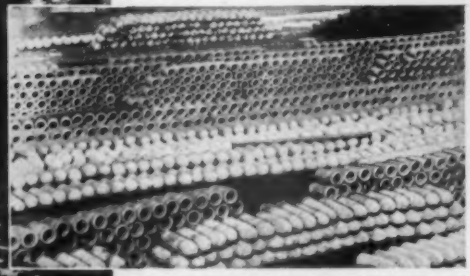
200th Anniversary

Mold used to cast cannon balls for the Continental Army. 1775-1781

Cast steel projectiles made for U.S. Navy during Spanish-American War.

The Panama Canal was dug to a great extent by power shovels fitted with "Panama" patented Two-Part Teeth, of Tisco Manganese Steel made at our High Bridge Plant. This photograph shows a shovel in operation during construction of the Canal.

U. S. Army helmets made of Tisco Manganese Steel during World War I.



9.2" shell forgings made for World War I.

1742 TW 1942

TAYLOR • WHARTON

1942

THE Nº 6

Pennsylvania Journal,

OR

Weekly Advertiser.

TUESDAY January 11. 1742-3.

This Day arrived here Capt. Fenning from London, by whom we have the following Advices, viz.

NUREMBURGH, October 4 O S.

According to the last Advices from the Army of Marshal Maillebois in Bohemia, which are of the 7th, it is evident that he is said to be obliged to retire. His Letters were to have gone to Frankfort Brestic, and then to ... [illegible]

Hague, Oct. 5 O. S. ... [illegible]

Advices add, that the Vice-Admiral Kinsbergen returns to arrive there at the same time, and that Baron Trenck, who is advancing towards Silesia with ... at the Head of 6 or 7000 Men, has orders to come back to this City.

and there is within the Bound of the Manno[r] several Iron Works and nigh to it a Meeting House. Also two other Tracts of Land containing 500 Acres in *Bethlehem*, a small distance from the Furnace that *William Allen* is building. Whoever inclines to purchase any part or the whole, may treat with *Isaac Pearson* in *Burlington* and know the Terms.

Philadelphia, Nov. 29, 1780.

NAIL RODS,

Of a good quality and different sizes,

TO BE SOLD,

By the Subscriber, at Union Iron-Works.

ROBERT TAYLOR.

December 2, 1780. 5||

Three Hundred Dollars Reward.

First advertisement using the Taylor name. The above clipping is from the New Jersey Gazette, December 6, 1780.

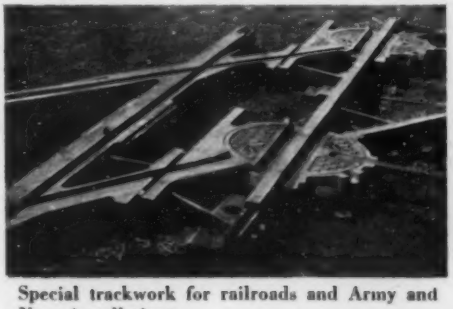
First newspaper reference to this Company. In the above issue of Tuesday, January 11, 1742-3, of The Pennsylvania Journal, note the mention of "the furnace that William Allen is building."

COINCIDENT WITH THE 50th ANNIVERSARY OF HADFIELDS MANGANESE STEEL IN AMERICA, FIRST PRODUCED AT HIGH BRIDGE, NEW JERSEY, ON OCTOBER 29, 1892

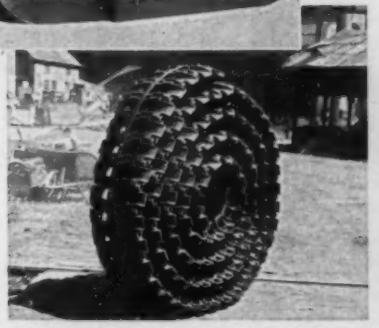
155 M.M. shells made for U.S. Army for present World War.

Photograph at left shows a Tisco Patented Rivetless Bucket made for placer dredges.

Crusher with wearing parts of Tisco Manganese Steel.



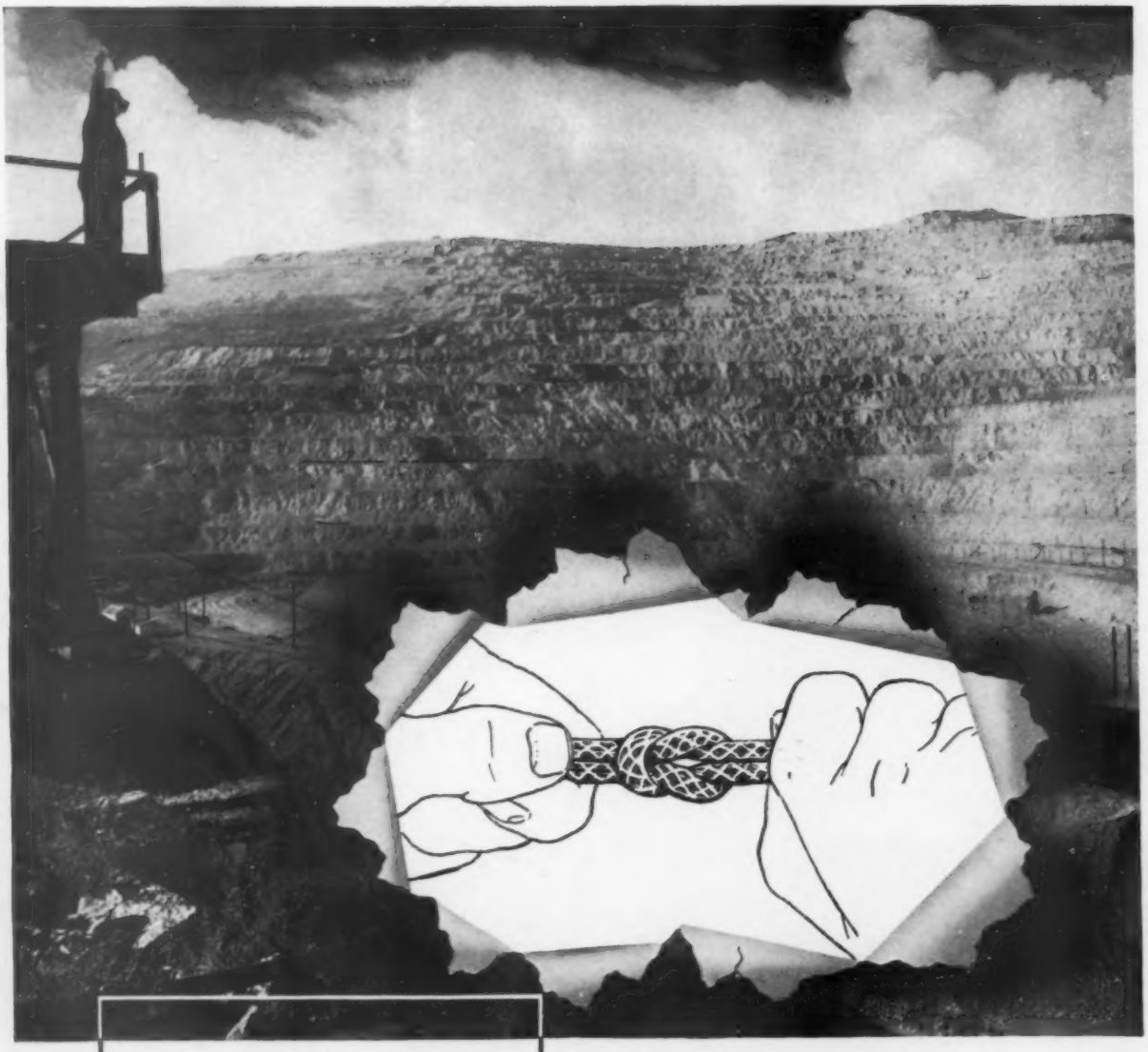
Special trackwork for railroads and Army and Navy installations.



Tisco Manganese Steel Tank treads for World War I and present World War.

Seamless high pressure gas cylinders for all compressed and liquefied gases.

IRON AND STEEL COMPANY



Use a Square Knot in Trunk Lines ONLY

Yes—you can use odd length of Primacord to make up the *trunk* lines provided you tie the lengths together with a square knot, *drawn tight*. It's got to be tight because it has to pass an explosive wave that is traveling at the rate of *20,350 feet per second!*

Do not use spliced or knotted Primacord in the holes. You'll be taking a long chance on missed holes if you do, because (1) water under pressure might penetrate the exposed ends of the Primacord, and (2) dropping explosives might strike and injure the connection.

It always pays to be extra careful in every operation connected with blasting — and the proper use of Primacord-Bickford Detonating Fuse pays big dividends.

THE ENSIGN-BICKFORD COMPANY
SIMSBURY, CONNECTICUT
Manufacturers of Safety Fuse since 1836

PRIMACORD-BICKFORD DETONATING FUSE

317 STURTEVANTS IN CEMENT PLANTS ARE HELPING TO WIN

STURTEVANT AIR SEPARATORS

are helping to boost cement production for war-time needs, cutting power requirements, assuring uniform fineness, and reducing upkeep.

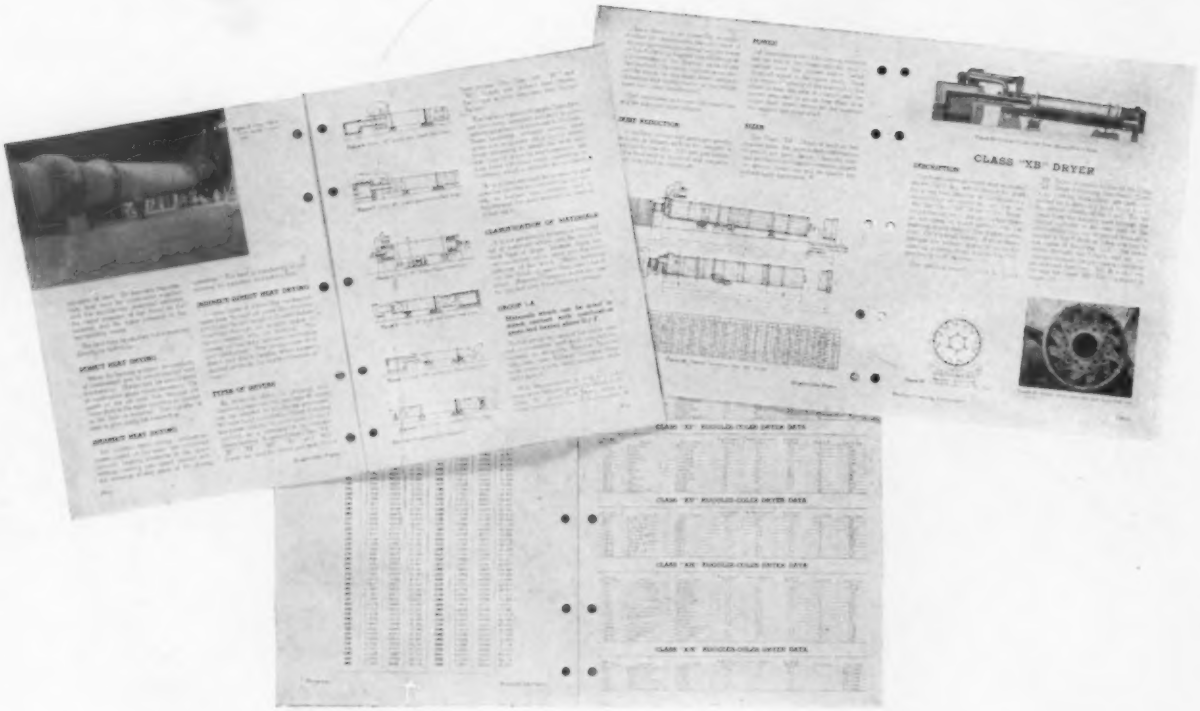
In Cement Plants alone, 317 Sturtevant Air Separators have been installed—all on approval. Not a single one has been rejected. Developed to its present state of perfection over a period of 20 years, it has set new standards in grinding technique, reducing power consumption 10 to 50% and increasing mill capacities in some cases as much as 300%. Let us show you what it can do for your plant.

OTHER STURTEVANT PRODUCTS

Jaw Crushers
Crushing Rolls
Ring-Roll Mills
Swing-Sledge Mills
Rotary Fine Crushers
Moto-Vibro Screens

STURTEVANT MILL COMPANY

HARRISON SQUARE • BOSTON, MASS.



A New "Ruggles-Coles" Dryer Bulletin

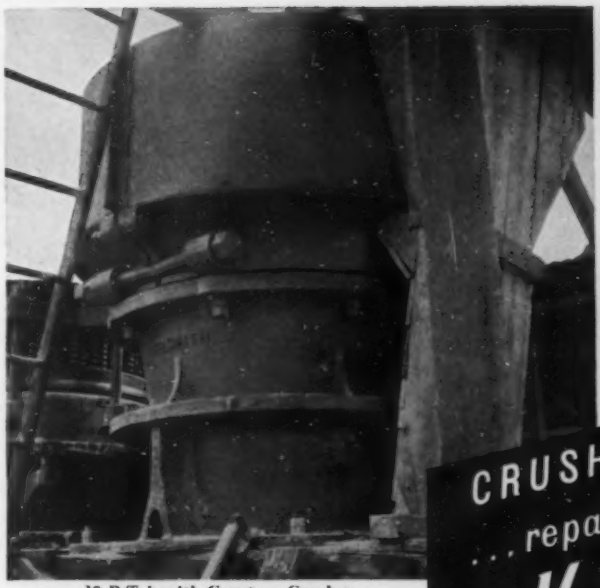
This 36-page Hardinge bulletin discusses the fundamentals and various methods of drying the many classes of raw materials. It describes in detail the construction, application and operation of six types of "Ruggles-Coles" Rotary Dryers—the double shell Direct Heat Dryer, the double shell Indirect Heat Dryer, the Rotary Steam Tube Dryer, the single shell Direct Heat Dryer, the parallel flow Direct Dryer, and the single shell Hot Air Dryer.

Ask for Bulletin 16-C

HARDINGE

COMPANY, INCORPORATED - YORK, PENNSYLVANIA

122 East 42nd Street, New York, N. Y.
205 West Wacker Drive, Chicago, Illinois
501 Howard Street, San Francisco, California
200 Bay Street, Toronto, Ontario, Canada



13-B Telsmith Gyratory Crusher

CRUSHING 190,595 TONS

...repair parts and labor cost

1/10¢ per Ton

WITH THIS

TELSMITH

CRUSHER

RALPH E. MILLS, of Roanoke, Va., who heads the general highways contracting firm bearing his name, owns the completely modern Telsmith-equipped Arlington Stone Co. plant at Leesburg, Va. He not only knows highway construction and materials, but the kind of quarry plant equipment best suited to turn out crushed stone for highway construction.

● **Has Mr. Ralph E. Mills' choice of Telsmith equipment for his own quarry plant been justified by results? Let's look at the record of the 13-B Telsmith Gyratory Crusher. Used as an intermediate crusher for plus 2½", it takes the feed from the primary at 80 to 90 tons per hr.**

From the start of plant operations, Sept. 1, 1939, to Dec. 31, 1941, this Telsmith Crusher worked 3,941 hours, and crushed 190,595 tons. Repair parts cost $126.77. Labor charged to crusher maintenance: $55.73. Total crusher upkeep for 16 months: $182.50—*less than 1/10¢ per ton!* And the stone crushed is particularly hard and abrasive.

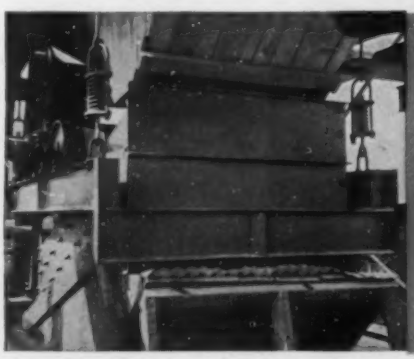
"Cost of lubricating oil is not included," says Mr. Mason M. Schoolfield, Plant Supt. "The figures do include all manganese costs—because there haven't been any. It is still operating with the original concaves and mantles. We bought two sets of concaves, one standard, the other extra thick to make smaller stone . . . the extra thick set has operated about four-fifths of the time. Both sets are still in good condition. The largest single item in the above cost figures was not crusher parts at all, but a new set of V-belts. In view of the type stone we are handling here, I think the figures are very remarkable!" You can get results like this in your plant—with Telsmith equipment! Get Bulletin Q-11.

SMITH ENGINEERING WORKS, 508 E. CAPITOL DRIVE, MILWAUKEE, WISCONSIN

Cable Addresses: Sengworks, Milwaukee—Concrete, London Q-7

Room 1604—50 East 42nd St. New York City | **211 W. Wacker Drive Chicago, Ill.** | **713 Commercial Trust Bldg. Philadelphia, Pa.** | **19-21 Charles St. Cambridge, Mass.** | **Blake Equipment Co. Columbus, Ohio** | **Brandeis M. & S. Co. Louisville, Ky.**

Charleston Tractor & Eqpt. Corp. Charleston, W. Va. | **Roanoke Trac. & Eqpt. Co. Roanoke, Va.** | **North Carolina Eqpt. Co. Raleigh and Statesville, N. C.** | **Wilson-Weesner-Wilkinson Co. Knoxville and Nashville, Tenn.** | **G. F. Seeley & Co. Toronto, Ont.**



Minus 2½" material passing grizzly, and discharged from 13-B Telsmith Gyratory Crusher, drops onto 28" x 35' Telsmith Belt Conveyor, is carried to Telsmith No. 7 Belt Elevator with 43" centers and goes up to two 4' x 10' Telsmith Pulsator Screens (*left*) over storage bins. Any one of the five finished products can be re-conveyed from bins to the Telsmith No. 36 Gyrasphere Crusher (*right*, with Telsmith Gyratory on extreme right) for re-crushing into ⅜", ½" or ¾" chips.

POSTER REPRODUCTIONS AVAILABLE ON REQUEST. SEE COUPON.

COPYRIGHT 1942, WICKWIRE SPENCER STEEL COMPANY

YOU CAN HELP DO THIS JOB

Your country needs all possible steel for guns, tanks, ships and shells. All the *wire rope* that can be produced is needed for military and naval uses—and to speed war production in scores of industries. You can serve your country by taking care of *your* wire rope, so that replacement is postponed as long as possible.

FREE BOOK TELLS HOW

It illustrates and describes more than forty ways to *save money* on wire rope. The big pictures of right and wrong ways make it easy to spot sources of too rapid wear—and *correct* them.

Many thousands of wire rope users throughout the world use this handy book as their guide to longer wire rope life. Now, with urgent war needs for steel and wire rope, it is doubly important that every wire rope user have a copy.

If you *must* have new wire rope to maintain uninterrupted war production, help us to help you by anticipating your needs as far in advance as possible, within priority regulations.

WICKWIRE WSS WISSCO PRODUCTS

WICKWIRE ROPE

Sales Offices and Warehouses: Worcester, New York, Chicago, Buffalo, San Francisco, Los Angeles, Tulsa, Chattanooga, Houston, Abilene, Texas, Seattle. Export Sales Department: New York City.

MAIL THIS COUPON

Wickwire Spencer Steel Company
500 Fifth Avenue, New York, N. Y.

☐ Send free copy of the book, "Know Your Ropes."

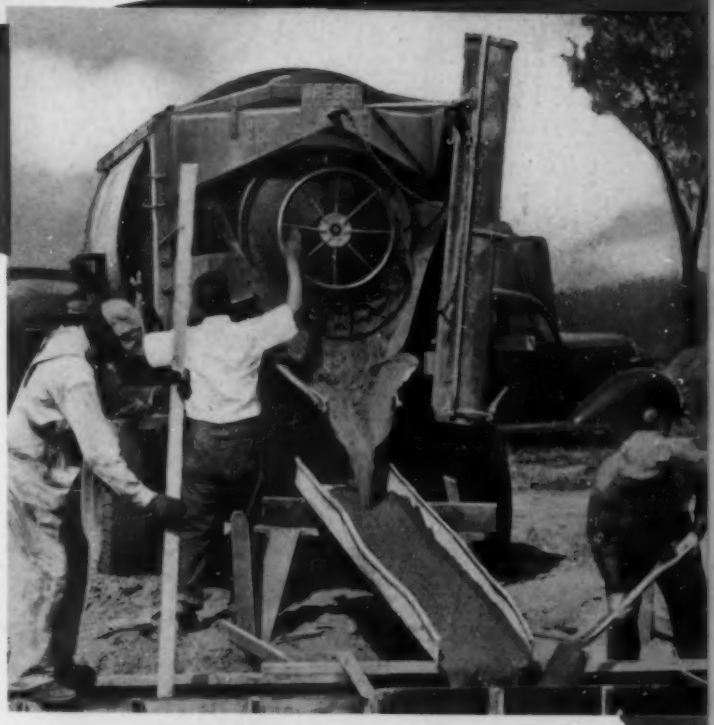
☐ Send.....free posters, 21" wide, of illustration at top of this page. No advertising appears, merely prize-winning title, "I Pull with Uncle Sam."

Name.....

Company.....

Address.....

2 Extra Trips PER DAY PER TRUCK with POZZOLITH (Cement Dispersion)



"SAVED $8.00 PER TRUCK PER DAY" SAYS TRANSIT MIX DEALER

Project: Defense Plant in Detroit Area.
Architect: Albert Kahn, Inc., Detroit, Michigan.
Contractor: F. H. Martin Construction Co., Detroit, Michigan.

SAVING 23 minutes unloading time per truck enabled the transit mix dealer on this job to increase the number of trips per truck from 6 per day to 8 per day.

Before adding Pozzolith, the 5 sack mix had a 2" slump and it required 30 ***minutes*** to unload the four yard truck.

After adding Pozzolith, the mix showed a 4" slump ***even though water had been reduced about*** 16%. Easier workability and faster placing reduced unloading time to 7 ***minutes.***

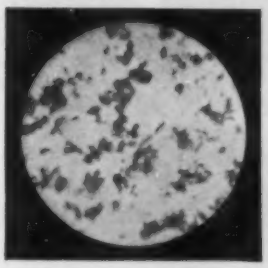
In addition to speeding unloading and placing, Pozzolith reduces truck cleaning time and permits a saving of 15 to 30 cents per yard on the total materials cost.

Transit mix dealers using Pozzolith are able to supply concrete which—(1) speeds construction, (2) has greater density and watertightness, (3) requires less finishing.

Write for illustrated Pozzolith booklet and complete information.

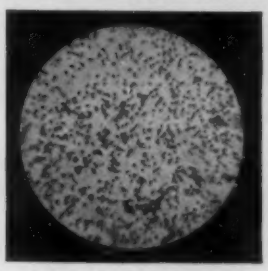
THE MASTER BUILDERS COMPANY
CLEVELAND, OHIO — TORONTO, ONTARIO

HOW CEMENT DISPERSION WORKS



Cement suspended in water
UNDISPERSED
WITHOUT POZZOLITH

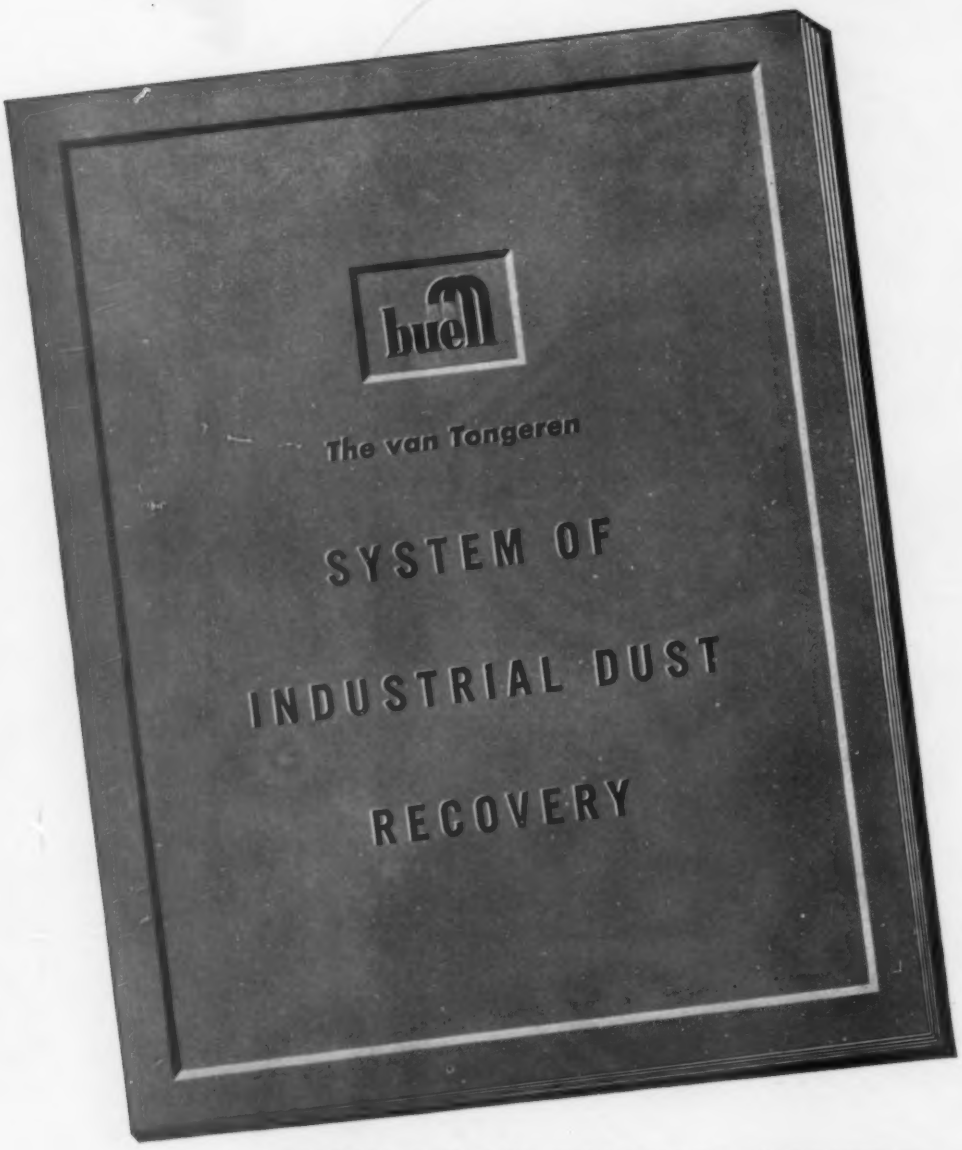
In a normal concrete mix, cement particles tend to bunch together, thereby (1) limiting hydration and (2) trapping water within the cement clumps. (See photomicrograph above).



Cement suspended in water
DISPERSED
WITH POZZOLITH

Cement Dispersion drives these particles apart and (1) exposes their entire surface area to hydration, at the same time (2) making the water entrapped in the clumps available for lubrication of the mix. (See photomicrograph above).

MASTER BUILDERS



A NEW BOOK ON DUST CONTROL

Vital to War Production

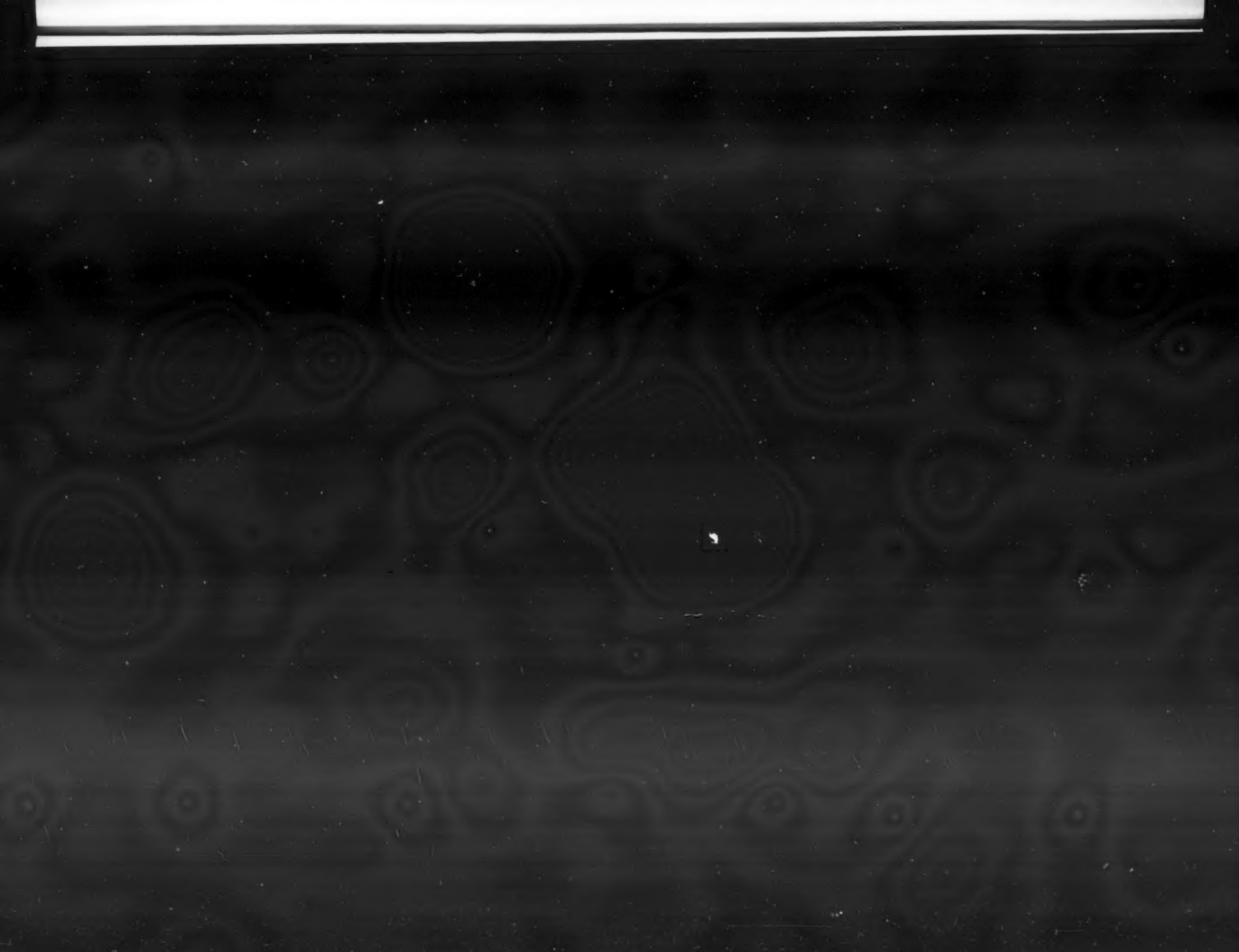
This new, 28-page book, prepared under the direction of the Buell engineering staff, discusses the importance of dust control in war production; and contains much authoritative and helpful material on the problems of dust in industry.

Of particular interest are the specific examples given of the wide use of Buell (van Tongeren) Dust Recovery Systems throughout industry. These may suggest possible applications to your own business. We shall be glad to send a copy of this informative book upon request to any interested executive or engineer. Simply ask for Bulletin R-10.

BUELL ENGINEERING COMPANY, Inc.
Suite 5000, 2 Cedar Street, New York
Sales Representatives in Principal Cities

CONSULT BUELL *First* IN DUST RECOVERY
for Chemical • Rock Product • Metallic • Food • Flue or any other dusts

buell
DUST RECOVERY SYSTEMS



Must Pointers For Every Operator

Rock Products NEWS FLASHES

Briefs Comments Industry Highlights

SCRAP NEEDED

Washington, D.C.: Business journals and newspapers are requested to help push the campaign to bring in all available scrap metals. The mining and quarrying industry has also been warned not to scrap usable stuff, which is getting scarcer and scarcer. Let your conscience be your guide, but do please turn in all you can.

NEW BUSINESS

Chicago, Ill.: War is making much new business for producers in the rock products industry. You will find proof of it between the covers of this book. No proverb has been oftener proved than, "Necessity is the mother of invention." Given an ingenious people - and who does not admit Americans are that - and a way out of every difficulty will always be found.

COMING! NUCLEUS PLANTS?

Washington, D.C.: Evidently anticipating further restriction in the allocation of steel and other critical materials for the manufacture of construction machinery and construction materials machinery, the W.P.B. is ordering all owners of such machinery to register it with the W.P.B. Regional Offices. The purpose of this registration is to make your machinery, and everyone else's, available to contractors and producers for essential war construction under some form of sale, lease or rental. The equipment required to be listed includes such items of rock products plant installations as clam-shell, orange-peel and drag buckets, crawler and tractor cranes, draglines, rock drills, power shovels, batching plants, conveyors, rock crushers, portable washing and screening plants, etc. Apparently it is not intended to cover fixed machinery in permanent plants. Such plants will probably be maintained to provide for "nucleus" plants to take care of needs when the war construction boom subsides. That is the way civilian needs are being taken care of in Great Britain. The nucleus plants are permitted prices sufficient to carry the fixed charges on the plants closed. We discussed the nucleus plant idea in our editorial, ROCK PRODUCTS, April, 1942, p. 27. So far we haven't heard much about it in the United States, but since the war administration here is seeking to profit by Great Britain's experience, we shall probably hear much more about it in a few months. In Great Britain it is a frank and honest attempt to save private industry for the duration.

NORTHWEST BIZ HUMS

Seattle, Wash.: The Northwest certainly suffers no lack of market for construction materials. All the portland cement plants in central Washington are working to capacity and some cement is being shipped in from the Coast plants. Construction demands for the Army in prospect will take all the output up to July, 1943. If training facilities for the Army are doubled, as they may be, demand will last a long time after July, 1943. The most critical factor cement companies face is labor shortage. The production of coal in the Northwest is seriously affected by the miners flocking

to ship-building plants. Even the cement plants are losing skilled workers. In one case a chief electrician quit his cement-plant job at $325 per month to get $650 per month. Coal supply is short and unless something is done about the labor situation the cement plants will be unable to maintain production schedules.

WHOSE WAGES TO BE FROZEN?

Chicago, Ill.: The foregoing is an interesting sidelight on the "wage freezing" problem of the President and the Congress. Holding down union labor contracts to a 5¢ per hour increase instead of a 10¢ demanded is only a small part of the problem. The big increases are those made by employers to take needed men from other industries, or by employers to keep key men from being taken. The attempt to freeze Western miners of copper and other critical metals and lumberjacks to their jobs will be watched with interest. If the government can do that, it can go a long ways to restrict the inherent "freedom of contract," generally conceded to be basic in democracies. However, it is obvious something more than patriotism and loyalty to an old employer is needed to curb human selfishness, just as apparent in the laboring man and the farmer, as in the "big shot." There are many evidences that the man-power shortage will call for drastic solution. All men, whatever their station in life, should be prepared to give their services for something directly connected with the war effort.

MOTOR TRUCK PERMITS

Washington, D.C.: The Office of Defense Transportation (O.D.T.) will assume complete control of all motor trucks in this country on November 15. After that date you can not operate any kind of a truck without a special permit, for without a permit for each individual truck, you can't get gasoline, tires or repair parts. The O.D.T. 21 order is designed to confine the operation of all trucks to tasks necessary to war, or to essential domestic economy. It is part of the rubber-saving program. Pleasure car owners will get their specific orders, too.

CEMENT PRICES

Washington, D.C.: When the O.P.A. fixed the price of portland cement as of last March 15, it first permitted the price to be increased by the amount of subsequent freight-rate increase; then the O.P.A. changed its mind and said the freight-rate increase could not be included. Evidently numerous cement manufacturers "never heard" the second order; and, now, on September 15, O.P.A. "recognizes" ceiling prices including the freight-rate. Evidently, the O.P.A. simply had to legitimatize an established practice. The regulation provides that the producer's maximum for Types 1 and 2 portland cement should be the price the producer charged or would have charged a purchaser between March 1 and March 15, 1942, plus any increase in freight rates since March 17 for shipments to the purchaser. For other grades and types of cement, the regulation provides that the producer must add or deduct from the maximum prices fixed for the two basic portland cements the average differential which prevailed on March 15 for white cement, oil well cement, masonry cement, etc. Dealers may increase their maximum prices to the extent that the producers' delivered price is raised.

The Staff

You Win All the "Chips" with the Universal 27-G Porto-Plant!

The Efficient Screen Unit!

Double Deck Auxiliary Vibrating Screen shakes out chips which are conveyed to truck or stock pile—balance of crushed material is conveyed to main screen over mixing hopper.

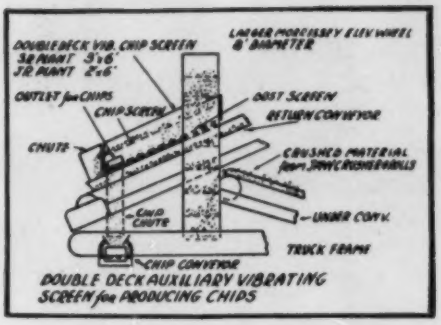
Where there's a big demand for chips for seal coating airports and roads—and there's a lot of it being done these days—the 27-G gives you the winning cards.

A Western state road commission* reported:

"We purchased a Universal 27-G Portable Gravel Plant in May, 1941 and our experience with it has been very favorable compared to similar size plants of other makes operating in this territory. The production capacity of the Universal seems much higher. *On a 5-day test run, July 1st to 5th, production of chips alone averaged 210 yards per 8 hours.* This is exceptional capacity and we can highly recommend this plant for highway work."

This bonafide letter from our files was passed on to us by a prospective purchaser who inquired of this user what they thought of their 27-G. Every contractor, pit owner and highway commission using them has similar praise for them! Send for Specification Sheet 27-G detailing the 4 sizes.

*Name on request.



DOUBLE DECK AUXILIARY VIBRATING SCREEN for PRODUCING CHIPS

A low cost chip screen on the return conveyor of this compact dual crushing plant provides a high chip yield — makes a separate screening operation unnecessary.

UNIVERSAL CRUSHER COMPANY

617 C Ave. West — Cedar Rapids, Iowa

UNIVERSAL

CRUSHERS, PULVERIZERS, COMPLETE PLANTS, SPREADEROLLERS, PORTABLE ASPHALT PLANTS

PRIZE OFFER FOR Maintenance HINTS and HELPS For Publication in ROCK PRODUCTS

WAR *Requires Ingenuity*
WAR *Requires Resourcefulness*
WAR *Requires Conservation*

In the Use of Men Material and Equipment

ROCK PRODUCTS wants you to help Our Country by contributing some of the products of *your own* Ingenuity, Resourcefulness.

Rock Products wants to help Our Country by spreading on the record a compilation of Industry Ingenuity and Resourcefulness.

It's the patriotic thing to do—both for you, our reader, and us.

PRIZES

ONE $100 WAR SAVINGS BOND— *First Prize*

TWO $ 50 WAR SAVINGS BONDS— *Two Next Best*

TWO $ 25 WAR SAVINGS BONDS— *Two Next Best*

FIVE $ 10 IN WAR SAVINGS STAMPS— *Five Next Best*

Space rates with a minimum of $5 each will be paid for all other Usable Hints and Helps accepted by the Editors.

\+ + +

RULES

1. Any reader of ROCK PRODUCTS actually engaged in a rock products operation may offer a contribution.
2. The manuscript may be type-written or written long-hand, pencil or ink; spelling or grammar makes no difference—it is the usefulness or applicability of the idea or device as described that counts.
3. The manuscript should be accompanied by an illustration if possible. This may be a snapshot photo, pencil sketch, blueprint, etc.
4. The subject selected to be described may be any part of the operation—any phase of the production process. It may be on maintenance or repair of a piece of equipment or machinery; it may be a money or maintenance idea on lubrication; an accident-prevention idea; a cost-keeping idea; a way to solve labor or public relations problems —any subject made live by war conditions, or brought about largely by Ingenuity, Resourcefulness and Conservation as a result of war necessities.
5. In case of a tie for any of the prizes, duplicate prizes will be awarded to the persons tying.

JUDGES

The judges will be two prominent producers and the Editor-in-Chief of ROCK PRODUCTS.

Address all contributions and communications to

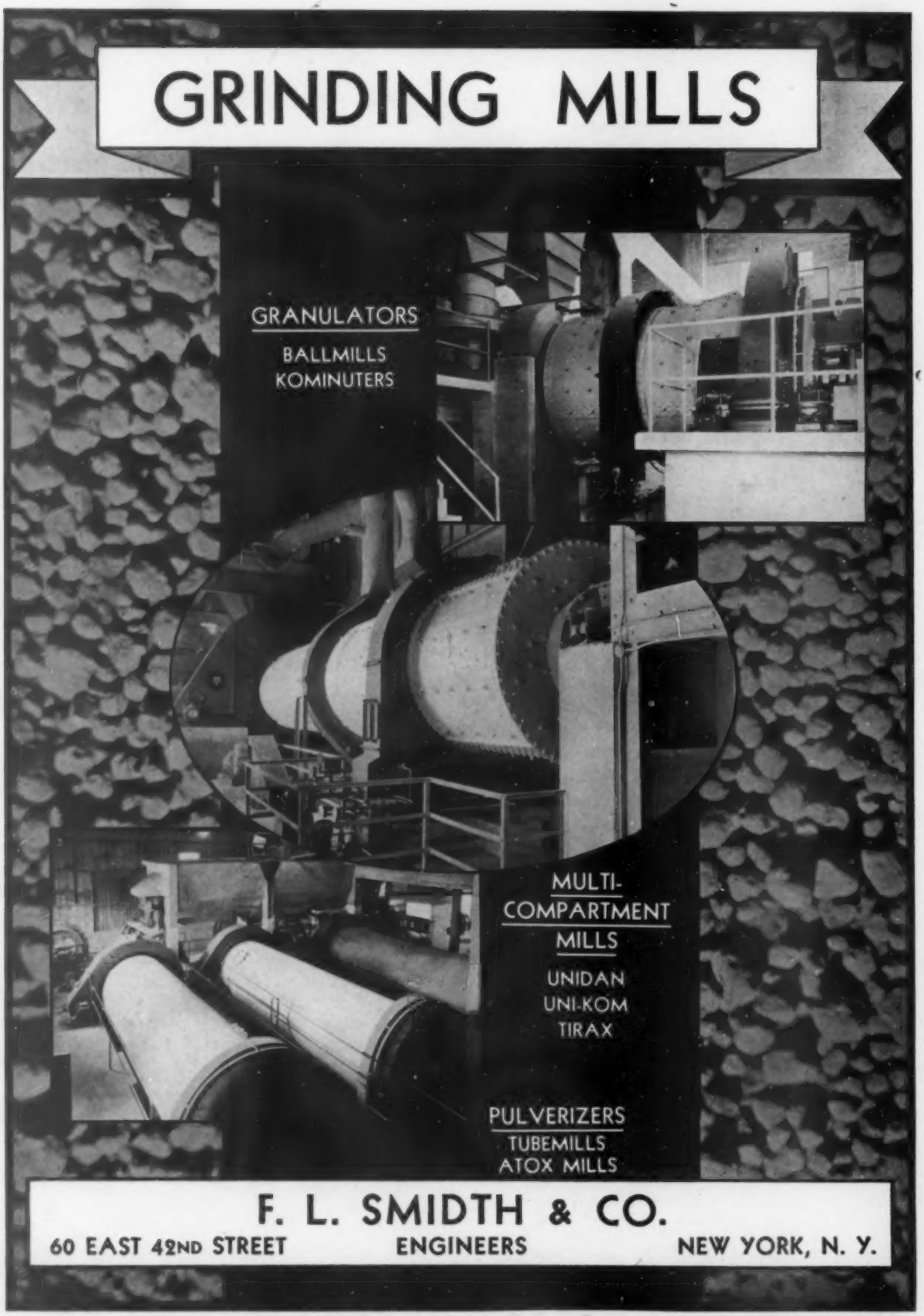
War Ingenuity Contest
ROCK PRODUCTS
309 West Jackson Blvd.
Chicago, Ill.

The contest opens with this Announcement and closes on December 15, 1942.

Prize winning HINTS and HELPS will be published in the January, 1943, issue and following issues.

Act Now!

GRINDING MILLS



GRANULATORS

BALLMILLS
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MULTI-COMPARTMENT MILLS

UNIDAN
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TIRAX

PULVERIZERS

TUBEMILLS
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F. L. SMIDTH & CO.

60 EAST 42ND STREET — ENGINEERS — NEW YORK, N. Y.

A Success Story FOR CLEVELAND SINKERS

(PROVEN BY REPEAT ORDERS)

★ When a mine asks for Cleveland H111 Sinkers to be placed on test in a big shaft job, operates them four weeks against two other American made machines, then buys *six* Clevelands, and later — on two occasions — buys *still more*, that proves that Cleveland H111 Sinkers are BETTER drills. On this job the Cleveland H111 Sinkers proved their superiority because they were easy to hold; the drill runners liked the way they handled; and the management was well satisfied with the footage they turned in. ★ If you have a shaft sinking job coming up, or any other work requiring a machine in the 55-pound class, you will want to give Cleveland H111's a try-out, in your own ground, with your own operators. It's easily arranged — simply tell us where to place a machine on trial. Wet or dry—any standard chuck. Deliveries that will surprise and please.

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Purves E. Ritchie & Son, Ltd., 658 Hornby St., Vancouver, B. C.
Whitehall Machine & Tools, Ltd., Galt, Ontario

DO YOU KNOW

How to start and operate a new drill? . . . How much you gain in drilling speed by keeping your machine well oiled? . . . How to select the best lubricants for rock drills and other air tools? That lack of oil sometimes causes parts to break? What happens when the drill chuck gets excessively worn? . . . The Driller's Handbook answers these and many other questions. Sent FREE to those who write us the sizes and types of rock drills, or other air tools they use.

The CLEVELAND ROCK DRILL CO.

3734 EAST 78TH STREET • CLEVELAND, OHIO

CABLE ADDRESS • "ROCKDRILL"

LEADERS IN DRILLING EQUIPMENT

FOR VICTORY TODAY
AND SOUND BUSINESS TOMORROW

Get This Flag Flying Now!

This War Savings Flag which flies today over companies, large and small, all across the land means *business.* It means, first, that 10% of the company's gross pay roll is being invested in War Bonds by the workers voluntarily.

It also means that the employees of all these companies are doing their part for Victory . . . by helping to buy the guns, tanks, and planes that America and her allies *must* have to win.

It means that billions of dollars are being diverted from "bidding" for the constantly shrinking stock of goods available, thus putting a brake on inflation. And it means that billions of dollars will be held in readiness for post-war readjustment.

Think what 10% of the national income, saved in War Bonds now, month after month, can buy when the war ends!

For Victory today . . . and prosperity *tomorrow,* keep the War Bond Pay-roll Savings Plan rolling in *your* firm. Get that flag flying now! Your State War Savings Staff Administrator will gladly explain how you may do so.

If your firm has not already installed the Payroll Savings Plan, *now is the time to do so.* For full details, plus samples of result-getting literature and promotional helps, write or wire: War Savings Staff, Section F, Treasury Department, 709 Twelfth Street NW., Washington, D. C.

Save With

War Savings Bonds

This Space Is a Contribution to America's All-Out War Program by

ROCK PRODUCTS

How the IMP MILL ... SIMPLIFIES PRODUCTION

CLAY { Drying / Grinding / Refining } one operation

SINCE 1887

Complicated processes . . . often requiring several units of equipment . . . can be handled in *one* operation by the RAYMOND Imp Mill.

Important clay products plants are using the Imp Mill equipped with double-whizzer separator and provided with a drying system *for drying and pulverizing.*

The mill receives the material with initial moisture as high as 27%. This is reduced to not more than 5% residual moisture, and the clay ground to a fineness of 99% or better passing 80-mesh. Other grades are produced at 99% minus 300-mesh, the classification being readily controlled with the whizzer separator.

Impurities are automatically rejected by a throw-out attachment, insuring a uniform grade of finished material.

Other products such as gypsum, limestone, oil-well drilling mud and various moisture-laden materials can be handled economically by this method. *Write for further details.*

RAYMOND PULVERIZER DIVISION
COMBUSTION ENGINEERING COMPANY, INC.
1307 North Branch Street CHICAGO
Sales Offices in Principal Cities • • • In Canada: Combustion Engineering Corporation, Ltd., Montreal

This Simple Test Shows Why the CONCAVE SIDE Cuts Belt Costs!

What Happens When a V-Belt Bends

FIG. 1

FIG. 2

If you care about belt costs, pick up any V-belt you have handy and make this simple test:—

Bend the V-belt while you grip its sides and you will feel how the belt changes shape. The top, under tension, narrows. The bottom widens. The sides of the belt bulge out. Clearly, if its sides were straight to begin with, the bent belt is forced into a shape that does not fit the sheave groove—as shown in figure 1, on the left.

Now, bend a V-belt built with the patented Concave side. You get the same shape change, but now the new shape exactly fits the sheave groove—as shown in figure 2. There is no side-bulge. Results? (1) Uniform side-wall wear—longer life! (2) The belt gets a full side-width grip on the pulley—carries heavier loads without slippage. This cuts belt costs and saves power.

Only belts built by Gates are built with the Concave side, which is a Gates patent.

THE GATES RUBBER COMPANY

Engineering Offices and Stocks in All Large Industrial Centers

GATES VULCO ROPE DRIVES

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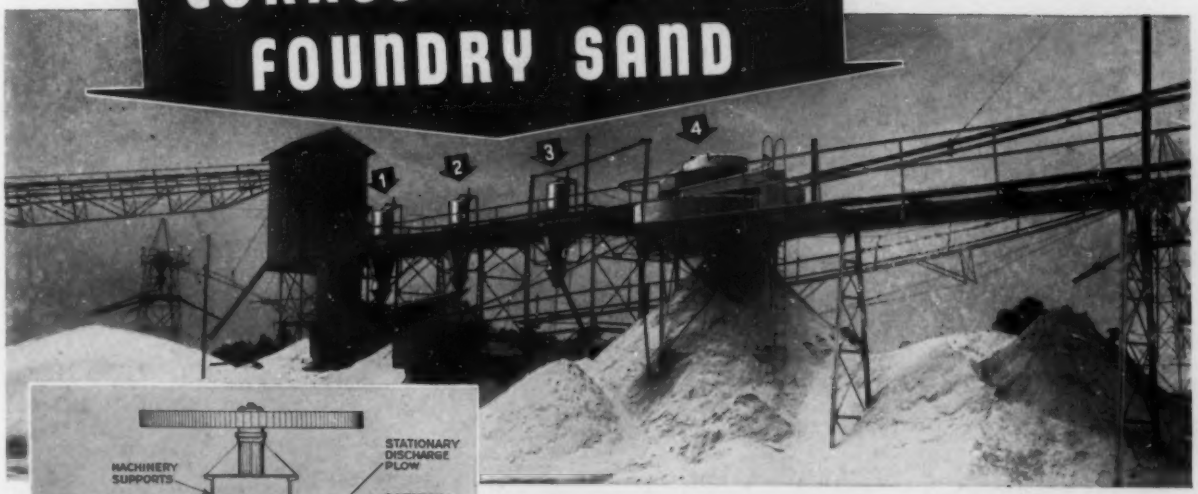
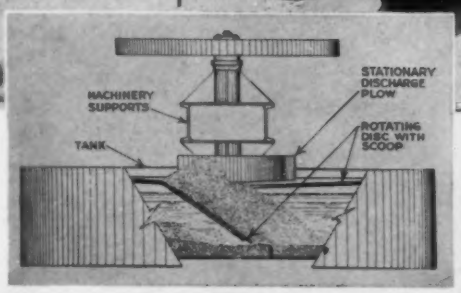
San Francisco, Cal. 2700 16th Street

CORRECTLY GRADED FOUNDRY SAND





Produced By LINK-BELT CLASSIFIERS At Newest Whitehead Plants

THE ROTOSCOOP

is an unusually efficient, highly flexible, self-contained, compact dewatering unit for all types of sand. It provides a simple method of recovering special grain sizes usually lost in the overflow water. Delivers sand dry enough for loading on trucks or conveyors. Made in four sizes—15′, 12′, 9′ and 6′ diameters, with capacities 20 to 150 tons per hour.

THE SHAW CLASSIFIER

This unit will not only produce clean commercial sand but will also make such special grades as asphalt, filter, engine, gypsum and glass sands. Sand graded and cleaned by this unit will meet the most exacting specifications, particularly where removal of fines is important.

The newest sand preparation plants of the Whitehead Brothers Company at Dividing Creek, N. J., are outstanding examples of modern equipment doing a vital wartime job with precision and economy. The Number One plant, shown above, is capable of producing seven grades of sand to A.F.A. standards with three Link-Belt Shaw classifiers and a Link-Belt Rotoscoop. The 30-inch classifier (1 in illustration) can be adjusted to produce three grades, the 24-inch classifiers (2 and 3), and the 12-ft. Rotoscoop (4), produce one grade each, while the overflow from the Rotoscoop, held in a settling basin, recovers a very fine grade.

The Number Two plant uses two Link-Belt conical screens for scalping over-14-mesh material. In the two drying plants, Link-Belt vibrating screens receive sand discharged from the dryers and operate as stationary or vibrating screens.

LINK-BELT COMPANY

Chicago Indianapolis Philadelphia San Francisco Atlanta Dallas
Toronto. Offices, warehouses and distributors in all principal cities

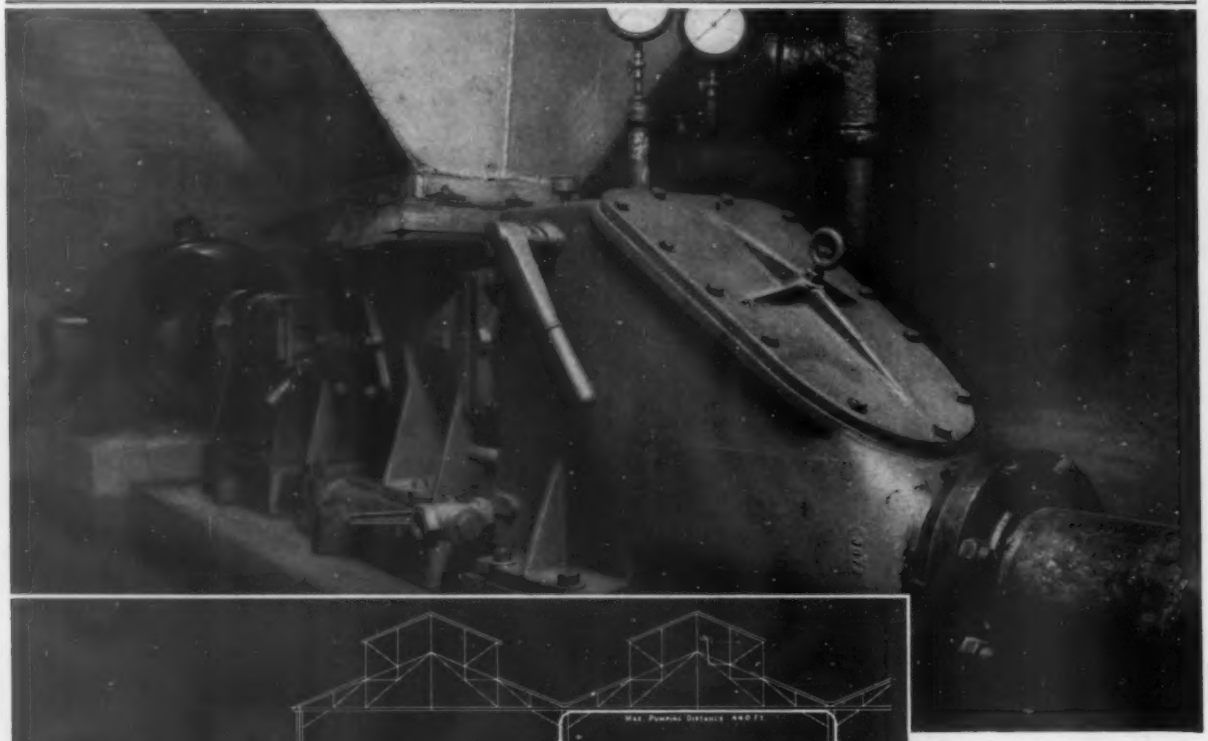
8542

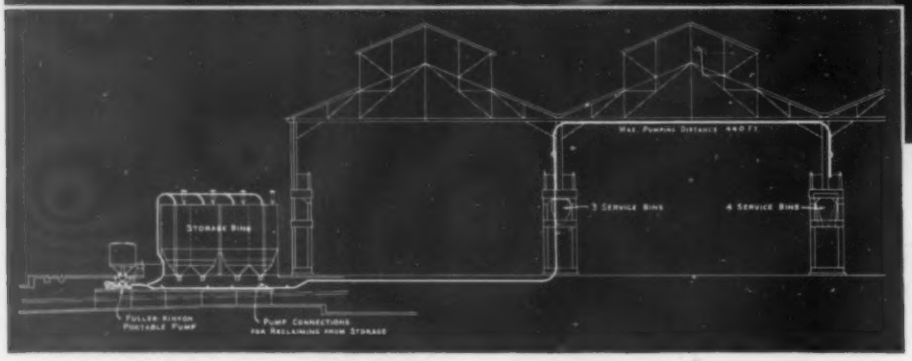
LINK-BELT

HANDLING AND PREPARATION EQUIPMENT

CONVEYORS • ELEVATORS • SCREENS • CLASSIFIERS • DRYERS • CONVEYOR AND DRIVE CHAINS • TRANSMISSION MACHINERY

Convey . . . The Fuller-Kinyon Way





Fuller-Kinyon System unloading, conveying and reclaiming clay and silica in a steel mill.

One Ton or 300 Tons an Hour . . . Elevations to 500 feet . . . Distances to 5000 feet

SOME MATERIALS CONVEYED BY FULLER-KINYON SYSTEMS

Arsenic dust	Dextrine
Asphalt filler dust	Dolomite
Bag fume	Gypsum (raw and calcined)
Baroid	Lime (quick)
Barytes	Magnesite
Cement (Portland)	Manganese dioxide
Cement raw materials	Ore (pulverized)
Clays (dry)	Rock dust
Colox	Siliceous powder
Copper converter dust	Silica
	Starch (pearl)
	Starch (powdered)

TODAY, more than ever before in history, material handling must be quick and efficient . . . equipment must stand up under unprecedented demands without failure . . . breakdowns, as far as possible, must be avoided.

The Fuller-Kinyon System is built for the rough going of today. Rugged construction, simple in design, it will give you unfailing service day in and day out with no extraordinary attention or expense. Only one moving part, the screw in the pump . . . replacement can be made quickly.

Materials conveyed through pipe lines by air . . . no drags, chains, links, etc. Pipe lines can be hung overhead or underground; will not interfere with other equipment or operation in the plant. The system is clean, silent and explosion proof.

Tell us about your conveying problems. Chances are we can help.

P-53

FULLER COMPANY

CATASAUQUA — PENNSYLVANIA

CHICAGO—Marquette Bldg. SAN FRANCISCO—Chancery Bldg.

"With Gulf Lubricants

our trucks stay out of the repair shop

The Whittemore Company, Roslindale, Mass., which supplies concrete and other building materials to several important construction projects in the Boston area, operates a large fleet of transit concrete mixers. The efficient trouble-free operation of this equipment is insured by the use of Gulf quality lubricants and fuels.

and operate more efficiently on the job". . . says Treasurer of builders' supply company

"WHEN a customer's job is ready for the concrete, we have to keep our trucks moving fast — and we can't take chances on breakdowns," says R. S. McSorley, Treasurer of the Whittemore Company, builders' suppliers. "That is why we have standardized on Gulf lubricating oils and greases. These quality lubricants help us get *continuous and efficient service from every unit.*"

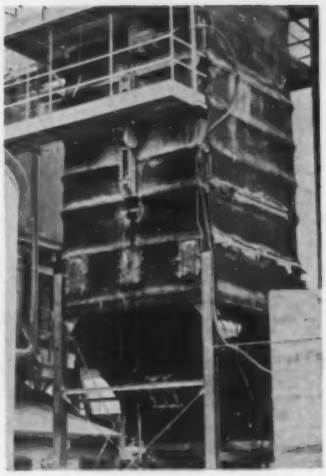
Here's one important reason why so many leading contractors regard the use of Gulf quality lubricants as an important safety measure: Gulf lubricants have greater stability and endurance — they stand up and provide full protection to contractors' equipment even under severe operating conditions. Mud, dust, or sand—hot or cold, Gulf lubricants insure top-notch performance and a minimum of costly delays.

You, too, can benefit by using Gulf quality lubricants on your next contract. Write or 'phone your nearest Gulf office today and ask a Gulf engineer to call. He will recommend the proper types and grades exactly suited for your particular requirements.

GULF

GULF OIL CORPORATION
GULF REFINING COMPANY
GULF BUILDING · PITTSBURGH, PA.

For *Positive* collection of gas-borne critical materials —specify COTTRELL . . .



• For more than 35 years Cottrell Electrical Precipitators have been cleaning air and commercial gases, recovering values and eliminating the nuisance of gas-borne dust. In metallurgical plants, cement plants, gas plants, paper mills, power plants, oil refineries and acid plants, Cottrell Precipitators are self-liquidating investments free from recurring maintenance charges and obsolescence reserve. Many Cottrells more than 30 years old are still in operation with efficiencies approaching 100%.

• Now more than ever before, selection of the correct collection equipment is of paramount importance in plant construction and enlargement. Critical material shortages make it imperative to specify the method which will, over a period of time, maintain the highest efficiency at lowest power, operating and maintenance costs.

• The collection problems faced by Industry today—whether simple purification, collection of values, nuisance abatement or combinations of all—can be solved quickly and efficiently by Cottrell Electrical Precipitators. Send for descriptive Bulletins.

The VERSATILITY OF COTTRELLS

is shown from the following valuable materials collected in a single day's operation.

1. *6 tons of soda salts at a paper mill.*
2. *55 tons of smelter dust containing 20 per cent copper.*
3. *13 tons of sodium sulphate.*
4. *3 tons of antimony dust from a silver refinery.*
5. *208 tons of 12 per cent copper dust.*
6. *1100 pounds of dust ahead of mercury condensers.*
7. *10 tons of arsenic.*
8. *3 tons of wet tar.*
9. *800 pounds of dry tar.*
10. *4½ tons of alumina.*
11. *5500 pounds of concentrated sulphuric acid.*
12. *220 tons of cement dust.*
13. *120 tons of fly ash.*
14. *6 tons of blast furnace dust.*

WESTERN PRECIPITATION
CORPORATION

ENGINEERS, DESIGNERS AND MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES AND LIQUIDS

New York City: Chrysler Building • Chicago: 140 South Dearborn Street • San Francisco: Hobart Building
MAIN OFFICES: 1015 WEST NINTH STREET, LOS ANGELES, CALIFORNIA
PRECIPITATION COMPANY OF CANADA, LTD., Dominion Square Building, Montreal

Mister— you can Lick that Worry!— —with a DEMPSTER DUMPSTER

★ **If your worry is a shortage of Trucks . . . if it's a shortage of Men . . . if it's Tires or Gas, you need a Dempster-Dumpster and extra bodies to fit your particular need! Wherever loading is done by hand, as well as many mechanical loading operations, the Dempster-Dumpster system of hauling is more essential to cutting costs now than ever before. In many rock quarries, lime, sand and gravel plants, one Dempster-Dumpster and 4 to 10 extra bodies are now doing the work of 3 to 6 complete trucks and drivers at tremendous savings in labor, investment and maintenance, and doing the job more efficiently with definite increases in profits.**

With the Dempster-Dumpster haulage system, men and equipment are never idle. You simply adjust the number of bodies used to suit the job and length of haul. Men are more efficient because of the low, convenient height of bucket for loading. While truck is hauling and discharging one load, other buckets are being loaded for hauling . . . an endless chain of efficiency for saving money. From liquid to dust to heavy materials of any size, you'll find a Dempster-Dumpster to fit your need, in sizes from 1½ to 10 cubic yards capacity.

Send for completely illustrated manual Now! We will appreciate the opportunity of submitting recommendations on your hauling problems without obligation. Dempster Brothers, Inc., 3102 Springdale, Knoxville, Tennessee.

DEMPSTER DUMPSTER

It Revels in Rock-

LORAIN-80

of Big Rock Stone & Material Co.

LITTLE ROCK, ARK.

feeds hungry crushing unit

● No job is too tough for a real rock shovel—that's why Big Rock Stone & Material Co., use this Lorain-80 in their quarry near Little Rock, Ark. They need a machine that will keep pace with the increased production demanded for defense projects—a machine that they can work 24 hours a day, if necessary, to feed their new crushing unit.

The Lorain-80 just rolls up its sleeves and goes to work in rock service. Its rugged, all-welded boom is designed to take more punishment than any rock digging or any operator can give it, and Center Drive design of turntable makes for *faster* digging through direct-to-the-point power transmission.

Ask your Lorain distributor for complete information on the Lorain-80 or any shovel or crane in the ⅜ to 2-yd. Lorain line. See him, too, for genuine factory-made repair parts, and expert rebuilding or repair service. He can help Lorain owners make present equipment last longer and work faster.

THE THEW SHOVEL COMPANY• *Lorain, Ohio*

THEW CENTER DRIVE

THEW-LORAIN CRANES • SHOVELS DRAGLINES • MOTO-CRANES

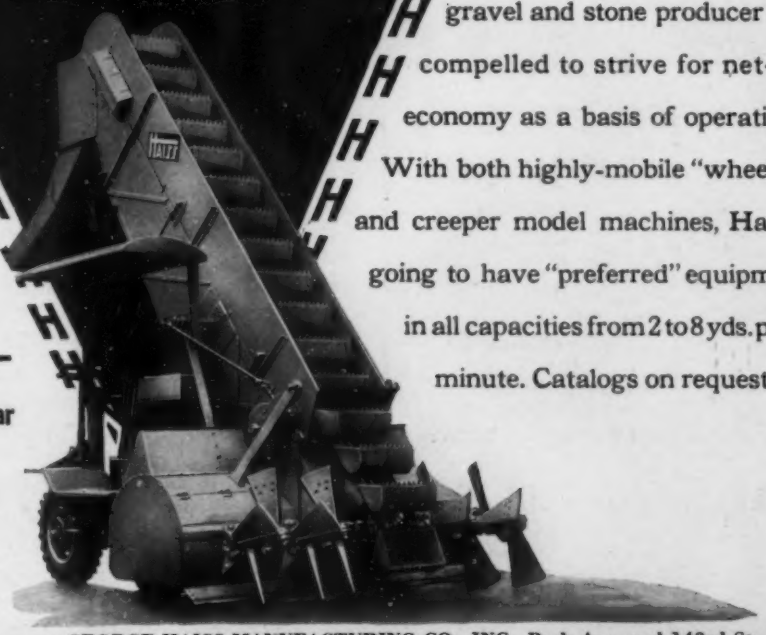
FOR

DOWNRIGHT ECONOMY

PER YARD OF STOCKPILE MATERIAL HANDLED, THE

BUCKET LOADER

IS 'WAY OUT IN FRONT, EVERY TIME!



MORE WORK per Lb. of Weight

MORE CAPACITY per Dollar Invested

MORE OUTPUT per Gallon of Fuel

MORE YARDS per Maintenance Dollar

MORE YEARS of Every-day Service

Haiss has specialized, from the start, in serving operators who based their equipment purchases on net-economy-over-years-of-service. When this war is over every sand, gravel and stone producer is going to be compelled to strive for net-handling-economy as a basis of operating profit. With both highly-mobile "wheel" types and creeper model machines, Haiss is going to have "preferred" equipment in all capacities from 2 to 8 yds. per minute. Catalogs on request.

GEORGE HAISS MANUFACTURING CO., INC., Park Ave. and 143rd St., New York City

HAISS QUALITY EQUIPMENT FOR 50 YEARS 1892 ★ 1942

HAISS

PORTABLE CONVEYORS ★ LOADERS ★ CLAMSHELL BUCKETS

Now.. Give the "FORGOTTEN" Bearing a Square Deal...

LOAD THRUST BEARINGS at RIGHT ANGLES to the axis of rollers...

For highest efficiency, most Radial bearings are loaded at *right angles* to the roller axis. Bearings loaded that way last longer, have greater resistance to shock and vibration.

But how about THRUST—the FORGOTTEN BEARINGS of Industry? Too frequently thrust loads are dumped onto the same bearing that carries the radial load—usually at acute angles that veer 15° to 40° from the perpendicular. No wonder the rollers tend to slide out from under the load. No wonder they wear against the radius of the race, building up high torque loads, setting up complicated internal stresses.

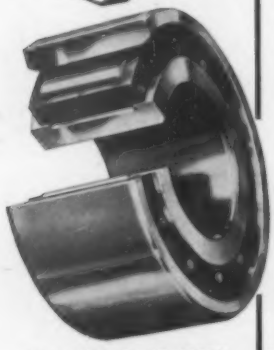
ALL ROLLWAY BEARINGS ARE LOADED AT RIGHT ANGLES

Rollway Heavy-Duty Roller Bearings separate THRUST from Radial . . . carry Thrust on a separate bearing assembly—*always at right angles to the roller axis.* Result: both thrust and radial bearings are more efficient . . . permit higher operating speeds . . . carry heavier loads in given dimensional limits. Chances are they'd help you to get better performance and longer life from your present machines, or improve the design of machines now on your drawing boards.

Why not send us your drawings for our specialized analysis and the benefit of our bearing "know how?" We'll give you "engineered to the job" bearing recommendations. We'll help you engineer your bearing problems down to earth. There's no charge, of course.

STANDARD METRIC DIMENSIONS AND TOLERANCES FOR QUICK SUPPLY AND LOW COST

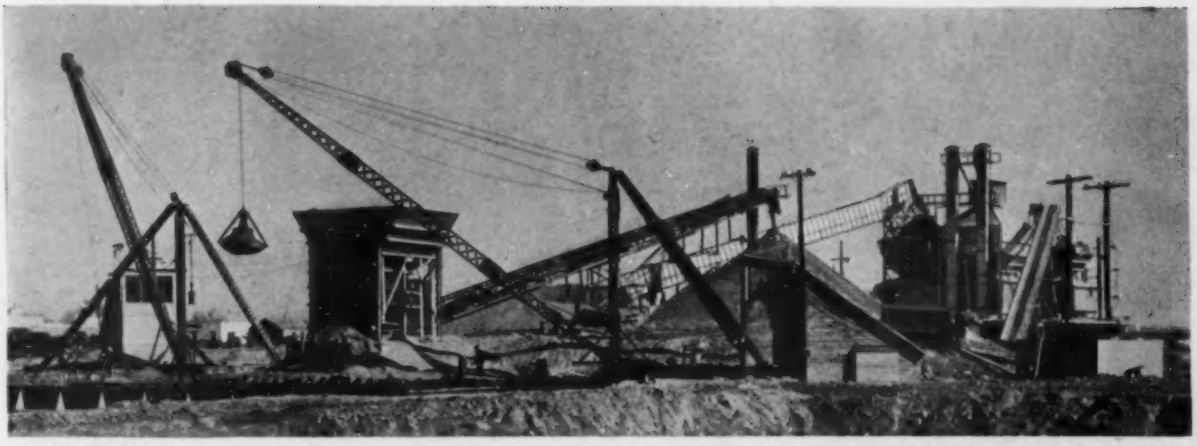
The available types and series of Rollway Solid Cylindrical Roller Bearings run into the hundreds—each engineered to standard metric dimensions and tolerances, and to specific uses. No extra tooling, no special machine setups are necessary to fill an order. You get faster service, easier replacements and lower cost.



Type MCS Double Width RADIAL Bearing

ROLLWAY BEARING COMPANY, INC., SYRACUSE, N. Y.

BUILDING HEAVY-DUTY BEARINGS SINCE 1908



Handling large stockpiles is accomplished by this radial stacker, tunnel belt, and two inclined conveyors. Complex layout utilizes much second-hand equipment, achieves extremely high production.

IT'S LAYOUT THAT COUNTS!

Howat Concrete Co. Achieves Efficiency In Complex Plant

Dual cement elevators handle five hundred barrels per hour. Tunnel gate can be seen in foreground.

Two lines of truck mixers are served at once for peak production. The cement bin takes care of both aggregate bins by means of automatic batching screws.

In any plant, whether large or small, the proper layout means the difference between success or failure. When the Howat Concrete Company installed a new plant to handle the enormous quantities of concrete required for the new War Department Office Building, it was only natural that they should turn to Butler engineers to handle the layout problem. Since new equipment was hard to obtain, much second-hand equipment was incorporated into the plant; yet Butler engineers solved the problem with outstanding success.

Twenty years experience have equipped them to handle any layout problem, no matter how complex. Whether your job involves a ready mixed concrete plant, central mixing plant, concrete products plant, or batching bin, let the Butler engineer sit in on the important conferences before a shovelful of dirt is turned. He may save weeks for you.

BUTLER BIN COMPANY, WAUKESHA, WISCONSIN

A FEW FEET OFF...

can double wire rope service

by relocating "grief spots" at drums and sheaves

For downright ability to take a beating, wire rope rates pretty close to the top of the list. However, simply because wire rope ***can*** stand up under rough-and-tumble treatment is no reason to subject it to abuses which can be avoided.

For example, by the simple operation of cutting off a short length at the drum end of a wire rope, you can frequently increase its service life by a worthwhile margin.

The reasons are as follows:

In the normal operation of rotary drilling rigs, crawler cranes, derricks, some mine shaft hoists and many other types of rope-using equipment, one or more short sections of the rope are apt to be exposed to concentrated wear.

The most serious "grief spot" occurs where the rope climbs from one layer to another on the drum. Severe pinching and abrasion are inevitable here, due to pressure between the wire rope and the flange of the drum.

By cutting off at least half a "wrap" from the drum end of the rope, you shift the section of concentrated wear and bring fresh rope over the "grief spot."

Even when there is no overwrapping on the drum, there may be concentrated wear over sheaves due to repeated lifts from a constant height.

Both of these conditions can be guarded against by systematically cutting off a few feet of rope before it becomes badly worn in any specific location. By installing a few extra feet of rope at the start, allowance can be made for "pruning," and the life of the entire rope may be as much as doubled.

The small amount of time and expense involved in this simple maintenance precaution will repay you many times over in increased wire rope service.

BETHLEHEM STEEL COMPANY

BETHLEHEM STEEL

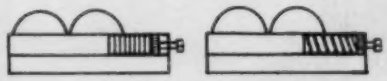
. . . THEY PROFIT

WHEN YOU ABUSE YOUR *Equipment!*

YOUR *Roll Crusher* WILL SERVE YOU BETTER AND LONGER *if you watch these points.*

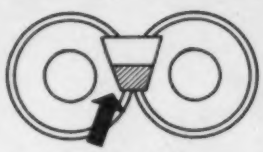
1. Feed rock that the rolls can grab. Too large rocks will ride on the rolls and cut grooves in the shells.

2. Feed crusher evenly over full surface of shells. Uneven feed will reduce production and cause uneven wear.



3. Keep springs tight enough to crush — but with sufficient play for safety.

4. Keep all bolts tight. Loose bolts cause unnecessary wear and may damage bearings or the crusher. Wedge bolts on roll shells will loosen during operation and should be tightened regularly.



5. Keep cheek plates properly adjusted and replace when worn.

6. Lubricate regularly and often. Grease all fittings. Grease slide bars. Check oil in gear cases.

7. Check all keys and see that they are tight.

Every operator should have a parts book and Instruction book. They are available to users of Pioneer Roll Crushers without cost or obligation.

Pioneer

ENGINEERING WORKS

Minneapolis, Minnesota, U.S.A.

(All weighed-in on the platform scale, another Mack-load of coal gets the go-ahead and rolls away. Sketched from life, near Scranton, by Peter Helck.)

Well-known American, at work!

THE SAYING "Built like a Mack Truck" is something more than a slang phrase. It is an acute observation on the difference between a Mack . . . and just a truck! It worked into the language because of the way a Mack works into a job. The first Mack, built in 1900, served 17 years. No one knows . . . *yet* . . . what records today's Macks will make. But you can put it down as sure that the first Mack, today's Mack, tomorrow's Mack . . . all set out to be the *best* trucks in the world when made!

Mack Trucks, Inc., New York, N. Y. Factories at Allentown, Pa.; New Brunswick, N. J.; Plainfield, N. J.; Factory branches and dealers in all principal cities for service and parts.

Mack

TRUCKS
FOR EVERY PURPOSE
ONE TON TO FORTY-FIVE TONS
BUY U. S. WAR BONDS

IF YOU'VE GOT A MACK, YOU'RE LUCKY . . . IF YOU PLAN TO GET ONE, YOU'RE WISE!

May the wreath we have won never wither

THE War Department and the Navy Department of the United States have conferred upon the men and women of Chain Belt Company the highest honor that can be paid to civilians engaged in war work . . . the Army-Navy "E" for outstanding achievement in production.

Because of our knowledge of the intense determination for Victory which has inspired Chain Belt workers in their willingness to serve and sacrifice, we were not surprised that the award was made. We knew it had been earned and we are gratified that this just recognition has been given.

The Army-Navy "E" pennant will fly proudly from the Chain Belt flagstaffs; and from the lapel of every worker will gleam the shining badge of honor which the Government has cast to signify individual and collective effort beyond the normal conception of duty.

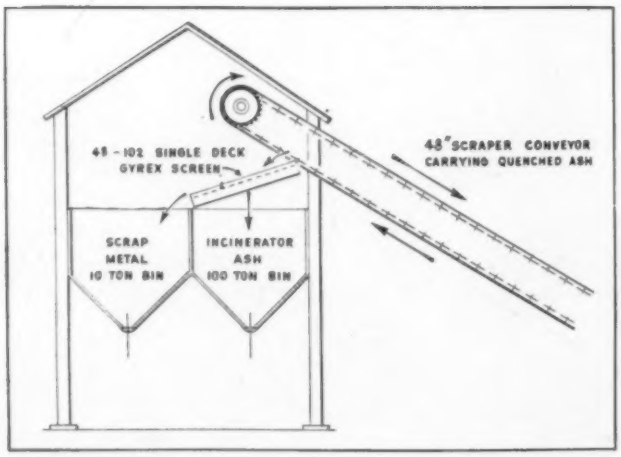
Chain Belt will endeavor to maintain the pace which it has established—to produce more and more for the triumph of our arms.

May the wreath we have won never wither!

THE LAUREL *of this wreath is a symbol of the Victory which Chain Belt workers are determined to win.*

THE OAK *of the wreath symbolizes the strength of the nation—on the battle lines and on the production front.*

CHAIN BELT CO.
OF MILWAUKEE



Pittsburgh Salvages 10,000 tons of Scrap —and nets $60,000

Robins engineers and machinery often participate in interesting installations. Many of them are unusual, some actually unique. One in the latter classification came up recently in Pittsburgh. Mr. D. C. Agar, Managing Engineer of the Bureau of City Refuse, wanted to salvage the scrap in city residue agglomerate. The screening methods used in coke plants seemed a logical and economical method of separation.

■ A suspended-type Robins GYREX Vibrating Screen was installed where it would receive material from the final scraper conveyor . . . at a total cost considerably less than $5,000.

■ At the present rate of recovery (and current contract selling-price) the City of Pittsburgh is recovering 10,000 tons of scrap for the war effort . . . and will net $60,000 a year from the salvaged metal.

■ Robins engineers are at your disposal for advice regarding economical efficient applications of screens and materials handling machinery.

ROBINS
CONVEYING BELT COMPANY
PASSAIC • N. J.

2-deck GYREX Screen showing Vibrator and base construction.

For Material Aid
in
Materials Handling
It's ROBINS

ROCK PRODUCTS' EDITORIAL PLATFORM

AN ADVERTISER asks us (presumably editors of other publications) some pertinent questions. All readers and advertisers are entitled to know our answers, because they are fundamental. If a publication achieves an individual character, the constant reader senses the editor's aims; but nevertheless a frank statement now and then is not amiss.

The advertiser asks: "What have been our principal themes or purposes through the years 1938 to 1942, inclusive." Our editorial policy does not change from year to year, but is the same the journal was founded on: namely, to lead in every progressive development of every branch of the industry; to be of the utmost usefulness to the industry. That is the object of all our editorial travels and our contacts in the industry. We have no political, social or economic axes to grind.

The advertiser says we can answer this one or not: "Are we asked to publish 'releases' supplied by the government; what is the nature of these releases; are we asked to provide free advertising space?" We can truthfully say that "the government" has never *asked* us to publish anything. The reverse is the case. *We ask* to be put on the mailing lists of those departments and bureaus whose work is interesting and helpful. So far as our experience goes, these mailing lists are pruned regularly to eliminate editors or others who are not interested. We don't doubt that the government is wasting tons of paper daily with piddling publicity stuff, but we know that the releases furnished us from the Bureau of Mines, the Bureau of Standards, the W.P.B., the Department of Commerce, for example, are helpful and informative. The only free advertising the government has ever asked for is to sell Victory Bonds for the U. S. Treasury. Our contribution to this cause is done cheerfully.

Now, a really pertinent, vital question, we think every American editor should commit himself in answer to, frankly: "Do you now anticipate a return to free enterprise and competition; or a system based on government allocations?" First, we believe we *still have* all the essentials of free enterprise possible for an all-out war. Considering the war powers vested in the President as Commander-in-Chief, in our opinion, he has used them with discretion. We see no evidence that he desires to be a dictator in the sense that term applies to the heads of some European nations. We do (the reader knows it) find plenty of things to criticise; and that's our right and privilege as a member of a free press in a free country; but we freely admit our conviction that the President is a sincere believer in our free institutions.

Although the President sometimes exhibits signs of impatience with the slow progress of democratic processes and apparently uses rather high-handed methods to get things going, on the whole he has shown wholehearted devotion to such democratic processes. He is accused of following rather than leading, but anyone who takes the trouble to analyze his technique can see that he deliberately and patiently builds up public opinion, and waits until he is reasonably sure it is behind him, before he makes so-called radical decisions. In other words, more than any previous President he is actually trying to rule or lead by weight of public opinion. If we want to change his ways or his decisions, we must change public opinion.

On the other hand, we also believe he has gathered around him some enemies of private enterprise; and that he is often unduly influenced by their ideas, or ideologies. In short, we would like to see him lean more heavily on strong men who could really help the commonwealth; but, after all, he is a man; he is human and vain like the rest of us.

From our own contacts with government, and as a business paper editor, it has been our privilege to meet and interview most of the top men, including the President, we can honestly say we have never seen any evidence in these high places of a desire to do away permanently with private enterprise. We think they are honestly, conscientiously trying in their own ways to save it in a world maelstrom of mixed socialism and fascism—maybe they are the same thing.

We do believe that the government will use every means available, first and preferably persuasion, to make private enterprise more orderly and more effective in meeting both domestic and world economic conditions as we find them. Obviously there will be more government regulation, higher taxes, less profit —in a nutshell, all business will be made more a public service and less greedy. We firmly believe, and our editorial efforts will go toward trying to make others believe, that private enterprise in the United States is too much a part of our scheme of life and too intimately bound up with our ideas of individual liberty to lose out. However, we have all got to help, for it isn't the job only of the President and the Congress and the Courts. It is the way we conduct *ourselves* in everyday life that will tell the story in history.

Nathan C. Rockwood

NEWS ABOUT PEOPLE

Universal Atlas Changes

BLAINE S. SMITH, president, Universal Atlas Cement Co., New York City, United States Steel Corporation subsidiary, announces the following

P. C. Van Zandt

appointments effective September 3: PAUL C. VAN ZANDT, vice-president, operating and engineering, who has resigned, is appointed consulting engineer with offices at 208 South La Salle St., Chicago, Ill.; HENRY P. REID, operating engineer, is appointed assistant to the president, New York; LOUIS M. FUNDERBURG, superintendent, Leeds, Ala., plant, is appointed operating manager, New York, succeeding Leonard Wesson, deceased; HENRY C. SCHMIELAU, General Auditor, is appointed comptroller, New York.

Mr. Van Zandt desires to have more leisure than his present duties and responsibilities permit. Accordingly he has resigned from active service as vice-president but will continue in the capacity of consulting engineer with headquarters after October 1 at the company's Chicago office. He has had 40 years' engineering, design and operation experience in the cement manufacturing field in the United States, Canada, Mexico, Cuba, Japan and China, and has built and started operation of a number of cement plants and waste-heat power plants. For 18 years he was connected with the Allis Chalmers company, designing and remodeling cement plants, correcting difficulties in operations, and increasing their efficiency. Mr. Van Zandt is the author of a number of technical papers on the cement industry in the Orient. He is a graduate in mechanical engineering from Purdue University and is a member of the American Society of Mechanical Engineers.

Mr. Reid has been with the company for 19 years as special engineer and recently as operating engineer. In his work with the company's cement plants he has dealt particularly with kiln operations, fuel economy, and rock and clinker grinding. He is the author of "Studies of Fuel Economies in Burning Portland Cement," "Use of Fuel in the Manufacture of Portland Cement," and "Use Classification of Coal in the Portland Cement Industry." He is a graduate in mechanical engineering of Cornell University, and is a member of the American Society of Mechanical Engineers and of the American Society of Heating and Ventilating Engineers.

Mr. Funderburg, who has been with the company over 18 years, became assistant superintendent at Leeds in 1930 and superintendent in 1936. He received his technical education at Alabama Polytechnic Institute. Prior to his cement connection he was plant engineer for the Alabama By-Products Corp.

H. P. Reid

J. P. CAMM, assistant superintendent at Leeds, succeeds Mr. Funderburg as superintendent. Mr. Camm is a graduate of Lehigh University. Before coming to the Leeds plant he was superintendent of the company's gypsum operation at Watonga, Okla.

Mr. Schmielau began work as a boy with the Chase National Bank. In 1911 he joined the Universal Atlas Cement Co., where he served successively as clerk, bookkeeper, assistant secretary, assistant treasurer and general auditor, prior to his appointment as comptroller.

L. M. Funderburg

Former Mayor

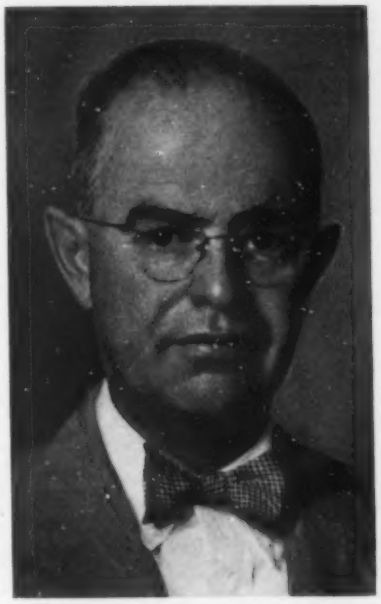
ROBERT POSEY, secretary and manager of the Henderson Concrete Co., Inc., Henderson, Ky., producer of ready-mixed concrete, prior to his affiliation with the company early this Spring served a 4-year term as Mayor of Henderson. He now is City Commissioner and a member of the Kentucky Municipal League which has as its president T. Ward Havely, president of the Central Rock Co., Lexington, and mayor of that city.

It was during Mr. Posey's administration that the City of Henderson became a thriving industrial city. He's a world war veteran, a past commander of the local American Legion and a descendant of General Posey, who served in the civil war and settled in that part of the country in 1804. Mr. Posey is a new-comer in the concrete business.

Brothers Eells

CLEVELAND, OHIO, is proud of the record of the Eells family. Current interest in magnesium production led the financial editor of the *Cleveland Plain Dealer* to look into Basic Magnesium, Inc. He came up with a lot of interesting things about the Eells family, who have been prominent in the rock products industry for two generations. After sketching how Basic Magnesium, Inc., came into being, the *Plain Dealer* article says:

"Entrance of the Eells family into production of magnesium is another distinct expansion of industry for which this family has been a leader



Dan P. Eells

the past century. It dates back to Dan P. Eells who from 1850 to 1903 was one of Cleveland's foremost bankers and business men.

"In 1880 he established at Bucyrus, Ohio, the Bucyrus Steam Shovel Co. The first shovel was purchased by the Toledo & Ohio Central Railroad which Mr. Eells built. He also was president of the road. His son, Howard P. Eells, Sr., took over direction of the Bucyrus company and at his death in 1919 it was an outstanding industrial concern. It furnished three-fourths of the excavating machinery that dug the Panama Canal.

"This company and the Erie Steam Shovel Co. of Erie, Penn., were merged in 1927 after the plant had been moved from Bucyrus to Milwaukee. The present Dan P. Eells, who is board chairman of Basic Refractories, is vice-president of Bucyrus-Erie. Its excavating machinery is used all over the world.

Howard P. Eells

"In 1908 H. P. Eells, Sr., started in Seneca County, Ohio, quarrying of dolomite which is used by steel companies for fluxing purposes. The company is now the largest producer in tonnage of basic bulk refractories in the country. Howard P. Eells, Jr., took over the operation of this company following the death of his father in 1919, and his brothers have been associated with him. Samuel Eells is vice-president in charge of sales, with Dan P. Eells acting in an advisory capacity.

Samuel Eells

"In their development of real estate around Cleveland, the Eells family is remembered by Eells Point at the westerly side of Rocky River on Lake Erie.

"Referring to the $100,000,000 magnesium development in Nevada, Howard Eells is reported saying 'that is completing the bit I did in France in 1917-19,' and continuing, 'It is an effort to play some part in the vital defenses of our country. That is the primary consideration'."

In Government Service

R. J. TEMPLETON, TALCOTT MOORE and NED WILLIAMS, all engineers for the Wyoming State Highway Department, recently resigned their posts to go on active duty with the Corps of Engineers. Mr. Templeton and Mr. Moore, both veterans of 20 years of service with the department, will become majors, while Mr. Williams, a member since 1928, will become a captain.

•

MARK T. GILKISON, sales engineer, Gates Rubber Co., Denver, Colo., has been called to foreign duty. He entered the army last October and was transferred to the Air Corps as a first lieutenant.

•

FRED D. WRIGHT, formerly with the Johns-Manville Co., is serving as First Lieutenant in the Army Corps of Engineers.

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NEIL O. JOHNSON, formerly technical representative in the explosives department of E. I. du Pont de Nemours in Birmingham, has been ordered to active duty as First Lieutenant in the Corps of Engineers, stationed at the Alabama Ordnance Works.

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ARTHUR W. THOMAS, sales manager in the construction machinery division of Chain Belt Co., Milwaukee, has been loaned to the WPB as a consultant for his division of industry and has left for Washington, D. C.

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S. C. ROTHMAN, formerly chief engineer of the Silicosis Research Division, West Virginia Workmen's Compensation Commission, has been com-

missioned a captain in the Sanitary Corps of the United States Army and attached to the Preventive Medicine Service, Occupational Hygiene Division of the Surgeon General's Office in Washington, D. C.

M. B. GARBER of the Thew Shovel Co., Lorain, Ohio, is now chief of the Excavating and Grading Section, Construction Machinery Branch, War Production Board. "Mike" Garber has been identified with the manufacturers divisions of the National Sand and Gravel Association and the National Crushed Stone Association since its organization many years ago; he was chairman of both and has always taken an active part in developing the relationships between active and associate members. For several months now he has been on leave from his company doing an extremely important job for the War Production Board.

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To Main Office

M. G. ALLISON, who has been manager of the specialty plant of the U. S. Gypsum Co., Port Clinton, Ohio, has been transferred to the firm's Chicago office.

Campaigning for Governor

HOMER P. BROWN, manager-owner of the Diamond Springs Lime Co., Diamond Springs, Colo., has accepted the appointment to serve as El Dorado County chairman in the non-partisan campaign of Earl Warren for Governor of California.

Join Basic Magnesium

H. P. WILLARD and F. E. THACKWELL, who has been with the U. S. Bureau of Mines in Salt Lake City, have joined the staff of Basic Magnesium, Inc., Luning, Nev.

Speaks on War Gases

HUGO KOCH, chief chemist at the Hannibal, Mo., plant of the Universal Atlas Cement Co., was speaker at a recent dinner meeting of the Kiwanis Club. He used for his topic "War Gases," and showed accompanying charts illustrating the effects and uses of various gases. He also showed a "sniff" set of five better known gases. Mr. Koch traced the history of chemical warfare from Biblical times and stated that World War II found the United Nations more than prepared for any gas attack that Germany or Japan would see fit to launch.

Cement Engineers

WALTER L. MAXON has been appointed manager of the Allis-Chalmers Manufacturing Co.'s crushing, cement and mining machinery department, it has been announced by

Herman Schifflin

Walter Geist, president of Allis-Chalmers. Mr. Maxon succeeds HERMAN SCHIFFLIN, dean of the country's cement machinery salesmen, who is retiring. Before entering the employment of Allis-Chalmers in 1937, Mr. Maxon was a professor of metallurgy at the Colorado School of Mines, and also served as a consulting engineer for various mining and metallurgical interests. In 1940, he became sales manager and chief engineer of the Allis-Chalmers mining machinery division.

Walter L. Maxon

Mr. Schifflin has been manager of the department since its creation in 1926, and he became manager of the cement machinery division in 1907. After serving an engineering apprenticeship in Chicago, at Fraser and Chalmers, in 1886, he went with the Gates Iron Works. These companies subsequently became a part of Allis-Chalmers. Meanwhile he began pioneering in the sale of cement making machinery. In 1898, the nation's cement producing capacity was about 4,000,000 bbl., Mr. Schifflin watched first the bicycle and then the automobile bring a demand for concrete highways. Under this impetus, he saw the portland cement industry capacity climb to its all-time peak of 180,000,000 bbl. His travels as a cement machinery salesman took him into every state in the union and to a number of foreign countries. Mr. Schifflin will devote his activities largely to his hobby of photography —and after the war, to travel.

Elected Club President

FRED J. KUEHNE, a partner in the Kansas Sand Co., Kansas City, Mo., has been elected president of Co-operative International, an organization of some ninety clubs, with a total membership of nearly 10,000.

General Sales Manager

FRANK A. SWEENEY has been appointed general sales manager of National Portland Cement Co., Philadelphia, Penn.

Lone Star Appointment

MARK H. SMALL, district manager of the Portland Cement Association, Kansas City, Mo., since 1933, has accepted a position with the Lone Star Cement Corp. Mr. Small has been with the Association for 19 years.

Joins Engineering Firm

E. W. WHISTLER, for the past four years field engineer for the Portland Cement Association at Denver, has resigned from that connection to accept a position in the engineering department of Whitman, Requardt and Smith of Baltimore, Md., architect-engineers on the construction of the Rocky Mountain Arsenal.

Promotions

FRANK E. MCCASLIN, former vice-president, secretary and treasurer of the Oregon Portland Cement Co., Portland, Ore., has been elected president, succeeding the late Lawrence C. Newlands. Mr. McCaslin has been with the company for 20 years. The *Portland Oregonian* describes the new president: "Mr. McCaslin, a young, but energetic, man, is widely known for his civic activities. He came here from Texas. He was on the civil service board in Washington, D. C., was president of the Portland Junior Chamber in 1933 and president of the Rose Festival in 1939. He is first vice-president of the Portland Chamber and a director, is a director of the Community Chest and vice-chairman of Portland traffic commission. He is a world war veteran, having served abroad, and was in Germany with the army of occupation."

D. H. LECHE is elected vice-president, general superintendent and director. H. P. DAVIDSON is elected treasurer and LEE PARSONS, secretary. Mr. Leche was former works manager and purchasing agent. Mr. Davidson was traffic manager.

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JAMES G. ROSS has been promoted from manager of the Asbestos Corp. to general manager. George Dick, general superintendent since 1937, becomes manager.

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JOHN F. NEYLAN, has been elected vice-president in charge of sales to succeed H. C. KOCH, retired, and J. BRYAN OLDHAM has been made general sales manager. Mr. Neylan has been associated with the Lone Star Cement Corp. for 23 years and until his election as vice-president was general sales manager. Mr. Oldham, who has been connected with the corporation for many years, was, until his promotion and transfer to New York, sales manager in charge of the corporation's Texas division with headquarters at Dallas, Tex.

American Standards Association Appointments

R. F. CLEMMER, District of Columbia Engineering Department, Washington, D. C., has been elected chairman of the reorganized Sectional Committee A37 on Road and Paving Materials, American Standards Association. W. H. CULLIMORE, National Paving Brick Association, Washington, D. C., was named vice-chairman. Other members of the executive committee are: C. S. Reeve, Technical Advisor, The Barrett Co., New York, N. Y.; F. V. Reagel, Engineer of Materials, Missouri State Highway Department, Jefferson City, Mo.; and W. J. Emmons, Associate Professor of Highway Engineering, University of Michigan, Ann Arbor, Mich. The sectional committee will work under the sponsorship of the American Society for Testing Materials.

Appointed Professor at Syracuse

KENNETH C. TIPPY, formerly an engineer in the Cement Products Bureau of the Portland Cement Association, Chicago, Ill., has been appointed assistant professor of civil engineering in the College of Applied Science, Syracuse University. He will have

Kenneth C. Tippy

charge of the hydraulics and materials testing laboratories. Mr. Tippy was born at Herrin, Ill., and attended the University of Illinois, receiving the degree of Bachelor of Science in Civil Engineering in 1927 and the degree of Master of Science in Civil Engineering in 1931. Following his graduation in 1927 Mr. Tippy spent a year with the U S. Bureau of Reclamation, Ellensburg, Wash., as chief of field party. He was then employed as junior engineer (hydraulic) with the Water Resources Division of the U. S. Geological Survey. In 1929 he returned to the University of Illinois as graduate-research assistant The following year Mr. Tippy was appointed instructor of civil engineering at Illinois and taught there for the next four years. He then accepted a position as assistant engineer of design with the U. S. Bureau of Reclamation, Denver, Colo., where he worked on the design of most of the large structures for the All-American Canal and in addition, designed other hydraulic structures appurtenant to canals.

Lady Manager

MRS. E. V. CORRELL, widow of the late E. V. Correll, former proprietor of the Hiddenite Crushed Stone Co., has been appointed secretary in charge of the Statesville, N. C., sales office of the Southern Aggregates Corp., of Raleigh, N. C. JOHN W. WEBB is sales manager for the western district of North Carolina, which includes the Statesville office.

In Navy Blue

ANTHONY ANABLE, a member of the Dorr Co., New York City, staff since 1923, has been commissioned a lieutenant commander in the U. S. Naval Reserve and has reported for active service. Sailing always was his hobby. He is a well-known yachtsman. His New England ancestors, too, were of sea-faring families.

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PHILIP B. BROWN, Rockingham, N. C., inspector in the materials and test department for the North Carolina State Highway and Public Works Commission, has resigned to enter the U. S. Navy.

New Owner of Rock Products Plant

E. M. BECKHAM, of Banning, Calif., has purchased the San Gorgonio Rock Products Co. from Oswald Brothers, well-known contractors of Los Angeles. Mr. Beckham, owner of the Mountain View Auto Camp, was formerly in the lumber milling and mining business, and the purchase of the rock products company, he said, offered him the best opportunity he had of getting back into a line of business which he likes.

Heads Safety Branch of Bureau of Mines

DAN HARRINGTON heads the health and safety branch of the U. S. Bureau of Mines, which has been enlarged to five divisions, with 530 employes. He is also in charge of the safety division of the branch, with 112 employes

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Honored by Alma Mater

EARL L. FLAD, vice-president and sales manager of the slag division of the Carnegie-Illinois Steel Corp., Youngstown, Ohio, has been elected president of the General Alumni Association of Lafayette College.

HINTS AND HELPS

Crusher Protector

WHEN CRUSHING a hard gravel, as every crusher operator knows, if the pebble is pinched in the jaws just right the rock will slip out of the

Screen over crusher keeps rocks from flying upward

jaws and fly upwards with considerable force. This can endanger other equipment or the operator. At a western operation the 4-ft. Symons cone crusher was covered with circular member made of ½-in. heavy wire cloth all of which was cut to fit by the welder.

This not only keeps such pinched rocks in bounds but will also serve the double purpose of keeping tramp iron from dropping into the crusher.

Some of these things are so simple that they should not need calling operators attention to, but the lack of many of these simpler devices often cause costly shut-downs.

Lubricating System for Jaw Crusher

TO CORRECT what was considered an unsatisfactory lubrication system for a 60- x 48-in. jaw crusher, the Weston and Brooker Co., Columbia, S. C., has been using, since 1935, a force feed system that simultaneously introduces lubricants of two types into the two main points that require lubrication. It is an adaptation of the common practice of having a force feed lubricator with compartments that serve separate parts of a machine.

The two main points for lubrication in the jaw crusher are the eccentric, with a babbitted bearing and a speed of about 800 f.p.m. and highly variable pressures; and the swing jaw shaft bearing, each of which called for a different type of lubricant. A special machine was built; with one compartment to carry nine pints of lubricant and sufficient takeoffs to handle the swing jaw bearings and another compartment carrying 31 pints for the eccentric bearing. This pump is mounted on a common base with and is directly connected to a small motor through a flexible coupling and a 165 to 1 gear reduction.

Insulating Working Floor

By LUCIUS S. FLINT

AN INTERESTING METHOD of installing insulation above clinker coolers was developed by the Southwest Portland Cement Co., at its Victorville, Calif., plant. In this plant clinker drops from the kilns to the rotary coolers which are located on the floor under the kilns.

Though the burner platform—the upper level of the building—consisted of heavy concrete, it soon developed that the coolers and the kiln hoods radiated so much heat as to make work on the platform almost unbearable. Rubber pads were tried first, did little good. Even when the men were equipped with wooden-soled shoes, their work was most uncomfortable.

Of course it would have been a relatively simple matter to lay insulation over the coolers when they were cold, but the company didn't want to stop the kilns. The problem was to devise a way of installing insulating material in an area where terrific heat was being radiated—the cooler temperatures run about 2000°.

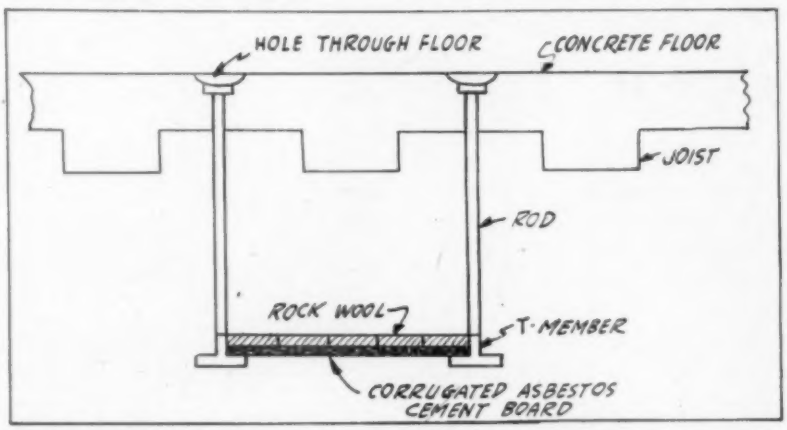
The difficulty was overcome through an ingenious method of laying false ceiling above the coolers and below the burner platform. Drilling a series of holes in the floor, workmen dropped 2-ft. long bolts through those holes. A horizontal member shaped like an inverted T was fastened to each of these long bolts. The vertical sections were ⅜ in. in diameter and the bottom of each T had a 4-in. spread, with a 3-in. webb.

With these hanging supports already installed at intervals of a few feet across the floor, it was possible for workmen to go in from below and lay the insulation. A large fan trained on him, a man would walk in on the platform above the clinker cooler and lay down a sheet of corrugated asbestos cement, walking right out again. The first workman would be followed by a second who carried a heavy rock wool bat. This was laid on the foundation formed by the asbestos material.

Because the men had to be in the room for only a few seconds, they were able to stand the heat without ill effects. There were no accidents and no workmen became ill as a result of the heat.

Within a very short time, a few workmen had laid a whole suspended ceiling of insulated material. Since both corrugated asbestos cement and rock wool are light materials, the inverted T members were able to carry the weight of the entire false ceiling without difficulty. No problem of fastening or other difficulty was experienced. The false ceiling was purely for purposes of insulation—it didn't have to carry any weight and therefore the sections could simply be laid out on the webbs fastened to the vertical supports.

Where the previous temperature on the burner platform had averaged



Details of rod and T-member installation to insulate burning platform floor from coolers

around 140 degrees, it was immediately cut to a comfortable working level. Workmen are now able to operate here wearing ordinary shoes—and without any discomfort whatever.

The company had considered installation of a ventilating shaft to carry off the heat which was kept below the false ceiling. But this proved unnecessary as the lowered ceiling tends to force down the hot air and make it disperse through regular openings.

Loading Concrete Tile

By WALTER LENHART

AT THE JORDAN CONCRETE PIPE COMPANY'S big plant near Fresno, Calif., a large amount of 30- to 42-in. di-

Ramps and pit, concrete-lined, facilitate loading of pipe on trucks

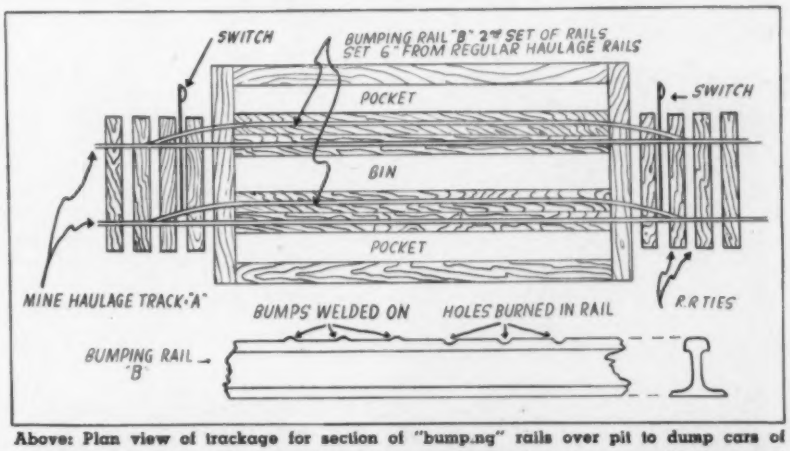
ameter tile are going to the various defense projects in the Central Valley.

To expedite loading of these tile a pit has been dug and lined with concrete. The trucks can drive into this pit from either direction as it ramps both ways. Truck and trailer can then be quickly loaded by one man if necessary, although at this operation three men were kept busy at the time the photograph was taken. The pit is so designed that the top of the truck is flush with the storage yard nearby. In some concrete pipe plants a single ramp is used, which requires that a truck back in for a load.

"Bumping Rails" to Dump Sticky Materials

By JACK PRUYN

A LARGE NEVADA MINE has a very efficient device for causing sticky muck to dump freely from bottom-dumping mine cars.



Above: Plan view of trackage for section of "bumping" rails over pit to dump cars of sticky material. Below: Elevation showing how rails may have bumps welded to top of rail or holes cut in rail with torch

Two sets of rails are placed about 6 in. apart; these two sets of rails are joined by switches at either end of the ore pocket. One set of rails marked "B" or "bumping rails" have a series of ½- to ¼-in. welts or bumps spotted on the rail; or instead of welts, holes may be burned in the rail. When the muck cars roll over this track, they are jarred and bumped enough to cause all muck to dump.

The switches allow the haulage motor to travel along the regular (smooth) haulage track, while the muck cars are traveling along the bump track.

This particular setup is used underground, but there are many instances where such an arrangement could be used with success on the surface.

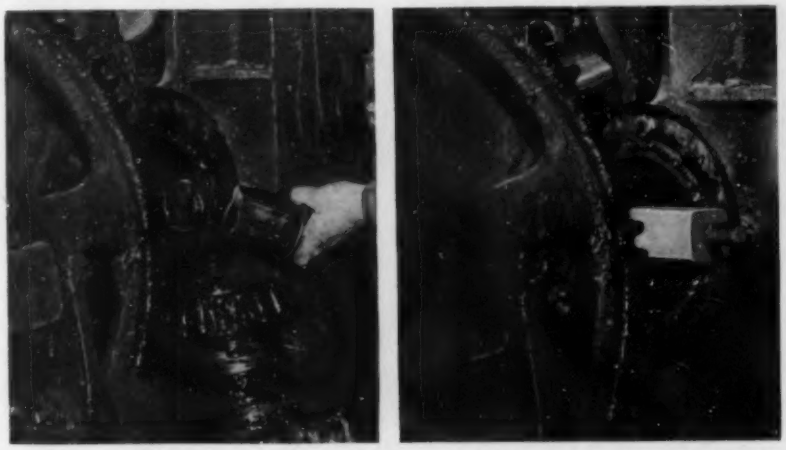
Welding Broken Shovel

LAKESIDE GRAVEL CO., Bellvue, Wash., recently made a major repair on a Diesel-powered shovel by electric welding. The before and after pictures, herewith, illustrate how the repair was made.

The broken part was the shaft which carries the swing and travel pinion for the shovel. As the shovel was needed for immediate service, no time could be lost to wait for a new part and it was decided to try welding. A Hobart portable engine-driven arc welder was used for the job.

In making the repair, the broken shaft was fitted back into place and tack welded. Then deep V's were cut into the crack with an acetylene torch. Build up beads were run with ⅛-in. mild steel rod. After the shaft was welded securely together, the tack welds were V'ed out also.

During welding, the shaft was turned to keep welds even and to facilitate safe cooling. Very little grinding was needed on the welds. The welding job cost about $12.45.



Left: Broken shaft which carries swing and travel pinion for the shovel. Right: Shaft in position after welding

R. W. McAllister, speaker at recent convention, National Lime Association

Useful Properties of Lime

Research studies* of lime and hydrate to determine special industrial purposes

R. W. McALLISTER, Arthur D. Little, Inc., Cambridge, Mass., who is in charge of the latest research project undertaken by the National Lime Association, reported on "The Examination of Lime and Hydrate for Special Industrial Purposes." This paper is chiefly distinguished by its direct approach to the determination and measurement of those properties of lime most useful in processes involving lime. Extracts from his paper follow.

"When one considers the widely different physical properties which can result from variations in the treatment accorded the same stone during calcination and hydration, it is little wonder that, with the additional variations of stone hardness, porosity, purity, etc., which exist between stones from different deposits, commercial limes and hydrates are so widely different.

"Some of the physical factors which we have studied for their possible value in defining a suitable or non-suitable lime for various industrial use applications are the following:

Settling Characteristics of High-Calcium Hydrate

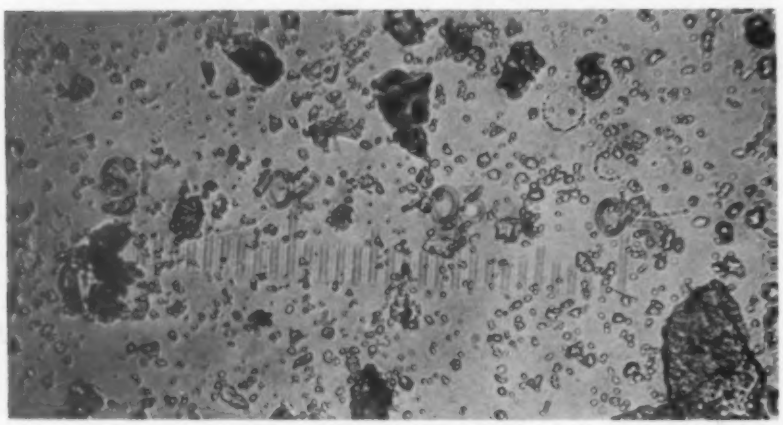
"A knowledge of the settling characteristics of a hydrate suspension is of great value in understanding the potential use of any lime or hydrate for a great number of commercial applications. This test, which is very simple in operation, presents to the prospective hydrate user a general picture of the broad fields of use of any hydrate under consideration.

"As we carry out the test a 10-g. sample of hydrate is placed in a 100 c.c. graduate and wet with water for 30 minutes. The hydrate is then thoroughly suspended in water at 25 deg. C. to a total volume of 100 c.c. and the settled volume recorded at intervals until no further settling takes place. In carrying out the test on quicklime, 7.5 g. are hydrated under predetermined conditions (we prefer the use of boiling water) and, when the temperature has dropped to 25 deg. C., the suspension is made up to 100 c.c. with water at the same temperature. Under these conditions the settled volume of a soft-burned lime or hydrate after one hour will range between 50 and 80 c.c., while that of a hard-burned hydrate will be between 20 and 50 c.c. Similarly the final settled volume of a soft-burned hydrate will usually run 30-40 c.c., while for a hard-burned product it will be 20-30 c.c.

"The following table shows the settling characteristics of 34 commercial high-calcium hydrates found in use during 1941:

SETTLING CHARACTERISTICS OF COMMERCIAL HIGH CALCIUM HYDRATES TAKEN AT THE POINT OF USE DURING 1941

Commercial Hydrate No.	Settled Volume at Indicated Time			
	30 Min.	1 Hr.	2 Hrs.	Final
1	81	59	45	42
2	73	47	40	40
3	90	78	45	39
4	70	40	39	39
5	87	72	47	37
6	86	60	36	35
7	88	76	41	34
8	75	56	—	33
9	66	33	—	33
10	82	60	34	32
11	65	36	31	31
12	77	51	35	31
13	60	36	30	30
14	77	55	33	30
15	—	66	39	30
16	82	58	30	29
17	41	35	29	29
18	68	35	29	29
19	87	74	45	28
20	83	65	40	28
21	82	60	41	28
22	79	58	34	26
23	83	66	39	25
24	65	35	26	25
25	—	—	—	25
26	60	38	25	25
27	77	54	31	24
28	72	50	24	24
29	70	45	27	24
30	46	28	23	23
31	51	25	—	22
32	—	—	—	20
33	47	26	19	19
34	23	21	19	19

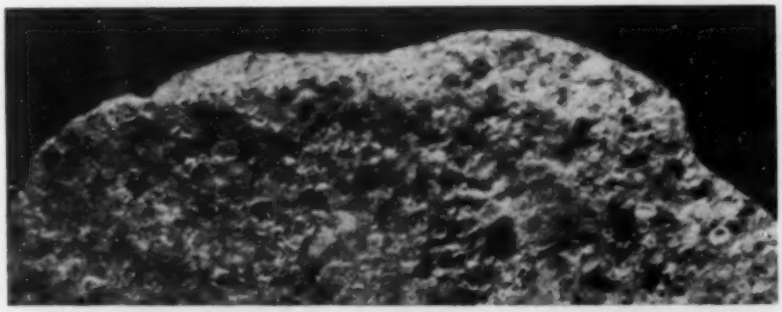


Lime hydrate of 1000 magnifications

"The settled volume after one hour is of great value in determining the suitability of lime for uses such as in causticizing and leather treating, since in the former instance rapid settling is important while in the latter slow settling is of equal importance. In fact for the majority of industrial uses for hydrate the rate at which the hydrate settles from water and the volume which the settled hydrate assumes are very significant. The settling rate appears to be affected by the size, shape, and state of aggregation of the hydrate particles. The settled volume appears to be correlated with average particle size, rate of reactivity, surface area and plasticity.

"The settling rate and settled volume can be modified by many factors. In general, with high-calcium limes, it can be said that the harder one burns a lime, the faster settling will be the resulting hydrate. Likewise, the closer one holds to a certain temperature of hydration and to the use of an excess of water (up to a certain point) during hydration, the slower settling will be the resulting hydrate.

"Certain chemicals may be added to hydrate to markedly alter the resulting volume. This is shown by the following table:



Two equally high-purity limestones under five magnifications showing different physical structure of the specimens

EFFECT OF CHEMICALS ON SETTLING RATES OF HYDRATE

	Settled Volume at Indicated Time			
	30 Min.	1 Hr.	2 Hrs.	Final Time
Hydrate A	90	78	45	39
Hydrate A + 1% Nopco 1111	67	57	55	54
Hydrate A + 1% Sapamine KW	62	44	35	27
Hydrate B	65	35	27	27
Hydrate B + 5% Nopco 1111	42	42	41	41
Hydrate B + 1% Sapamine KW	31	22	22	22
Hydrate A + 30 cc. Tertiary Buryl Alcohol	99	99	98	97
Hydrate A + 2% Carbon Dioxide	95	95	95	95

"Both hydrates A and B have the same chemical analysis and were derived from the same high-calcium limestone. Their very divergent settling rates indicate the differences which may result from different methods of burning and hydration. Hydrate A observed microscopically is extremely porous, has irregular edges, and an average particle approximately 2 microns in diameter. Hydrate B on the other hand has smooth edges, less porosity than A, and an average particle diameter of 5 microns. (25,400 microns equal 1 inch).

"Nopco 1111 is a so-called anionic wetting agent and consists of a mixture of 50 percent cocoanut oil in 50 percent sulfonated olive oil.

"Sapamine KW is a cationic wetting agent comprising diethyl amino ethyl stearyl amide acetate. Many other wetting agents markedly affect the settling rate and settled volume of hydrate. These two are given to illustrate the range of effect which may be obtained.

"We have theorized that the non-settling product obtained by the action of carbon dioxide on lime hydrate consists of a hydrous carbonate since in appearance it is definitely jell-like and will keep the indicated settled volume for weeks. However, if the suspension is repeatedly shaken it will finally settle to a smaller volume, such as 49 c.c. It should be noted, however, that not all hydrates will form this slow-settling material with carbon dioxide.

"There are methods of altering the rate at which a specified hydrate settles from a water suspension. It is possible by air classification, or otherwise, to separate the smaller from the larger particles; the separated products then will differ from the original hydrate and each other in settling characteristics. By mechanical disintegration a very pronounced effect upon both settling rate and settled volume can be obtained. The temperature of the water in which hydrate is suspended also has a significant effect upon the settling characteristics.

Settling Characteristics of Dolomitic Hydrates

"Conditions during burning and hydration of high-calcium lime which will produce a fast or slow settling hydrate cannot be employed to yield a dolomitic hydrate with like characteristics. Furthermore dolomitic limes appear to vary greatly in their settling

*From a paper before recent meeting of National Lime Association.

characteristics when burned and hydrated under identical conditions. Thus some dolomitic limes burned at increasing temperatures become progressively faster settling and show lower settled volumes, as do the high calcium limes. Others, however, reverse this trend entirely and yield the slowest settling and largest putty-volume hydrates when burned at 2500 deg. F. for long time periods. It thus appears that the optimum conditions to produce a certain type of hydrate must be determined for each lime. The only conclusion which we have tentatively drawn is that when the $SiO_2 + R_2O_3$ content of the dolomitic stone is low, the conditions effective with high calcium limes appear to apply. When the $SiO_2 + R_2O_3$ content is high, the higher temperature of burning give slower settling and longer-settled-volume hydrates.

"Examples of this variation can be seen from the following:

SETTLING RATES OF DOLOMITIC LIMES BURNED AT VARIOUS TEMPERATURES

Lime Description	% SiO_2 + R_2O_3	Settled Volume at Indicated Time			
		30 Min.	1 Hr.	2 Hr.	Final Time
Dolomite A 1750 deg. F.	0.1	86	68	40	32.5
Dolomite A 2100 deg. F.	0.1	87	73	45	32.5
Dolomite A 2500 deg. F.	0.1	80	62	39	30.0
Dolomite B 1750 deg. F.	0.9	77	55	31	29
Dolomite B 2100 deg. F.	0.9	80	61	32	28
Dolomite B 2500 deg. F.	0.9	86	73	44	25
Dolomite C 1750 deg. F.	1.9	67	35	30	29
Dolomite C 2100 deg. F.	1.9	73	47	41	32
Dolomite C 2500 deg. F.	1.9	75	51	42	33

Surface Area

"The surface area of a hydrate is important for applications such as in water-treating, bleach manufacture, soda-lime, etc. It is an even better index of reactivity than particle size since it takes into consideration both shape and porosity and is not influenced by the state of aggregation. After exploring several methods which we thought might be suitable for application with hydrate, we selected the nitrogen absorption method as appearing most satisfactory. This method, which is described in the literature, depends upon the fact that under suitable conditions nitrogen will form a monomolecular layer on the surface of finely divided materials. The amount of nitrogen forming such a layer can then be measured. Since it is known that each cubic centimeter of nitrogen will cover a surface of 43,800 sq. cm., the surface area of any material in question can be determined.

"A soft-burned commercial high-calcium lime hydrate by this method of physical testing showed a surface area of 43,500 sq. cm. per gram (21,200 sq. ft. per pound).

"When the above hydrate was subjected to dry mechanical disintegration so that the average diameter of the particle was reduced by approximately one-half, the surface area, instead of being at least twice as great, increased only from 43,500 to 46,000 sq. cm. per gram. Microscopic examination of the hydrate before and after disintegration has helped to explain this apparent discrepancy since little change in actual size of crystals occurs, but instead crystal clusters or aggregates are broken down into smaller groupings. Thus little actual surface area increase would be expected.

"Surface area measurements using liquid nitrogen carried out on completely hydrated dolomitic hydrate gave a value of 115,000 sq. cm. per gram. Thus this product has over 2½ times as great a surface area as even a soft-burned, high-calcium hydrate. This difference in surface area may serve to explain the difference in plasticity which commonly exists between these two types of hydrate.

"Microscopic examination of dolomitic hydrates shows an undetermined amount of particles considerably below 1 micron in diameter, which presumably are magnesium hydrate. One might theorize that such small particles serve to lubricate the larger particles and thus impart the elusive characteristic of plasticity.

"Since surface area measurements show the amount of surface exposed to any liquid reacting surface and therefore the value of hydrate for any rapid-reaction use, a knowledge of the effect of burning and hydration conditions upon surface area of the resulting hydrate would appear worth investigation by lime manufacturers.

Abrasiveness

"The abrasive quality of lime or hydrate is very significant in some fields of use. Thus, in oil treating, where lime is passed as a suspension through pipes and valves, the cost of valve and pipe replacement is significant. In the application of agricultural sprays containing lime hydrate differences in the abrasiveness of hydrates becomes very important. In wire drawing the abrasiveness of hydrate effects the die life as well as the tendency of the wire to break. A lime or hydrate of low abrasive quality is essential in causticizing when the sludge is to be used for paper coating if excessive wear to the paper rolls is to be avoided.

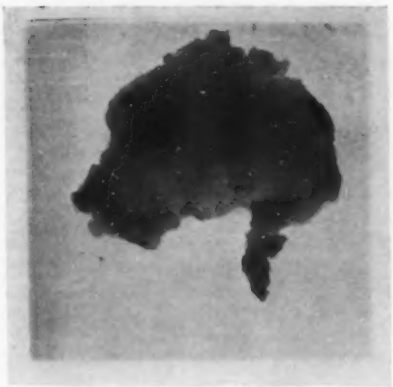
"In an effort to find a unit of measurement which would permit comparison of the abrasiveness of hydrates, we make use of a machine used to determine the abrasiveness of tooth paste. This has an electric-motor-driven rotating steel plate upon which a deep layer of paraffin is mounted. The lime hydrate being tested is made into a slurry with ethylene glycol and poured upon the rotating paraffin surface. A weighed silver block held in a fixed arm is then positioned to cause the silver to rest on the paraffin surface lubricated by the hydrate slurry. An adjustable weight on the arm can be moved to increase or decrease the amount of pressure.

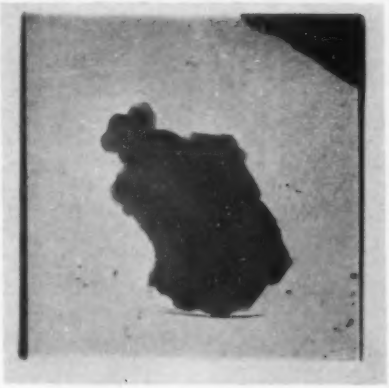
"The machine is provided with a counter and is usually run for 2000 to 5000 revolutions of the disc. The resulting loss in weight of the silver block is used for comparing abrasiveness. At the completion of a test the hydrate slurry is wiped off and the paraffin surface scraped with a knife to present a fresh surface for the next test.

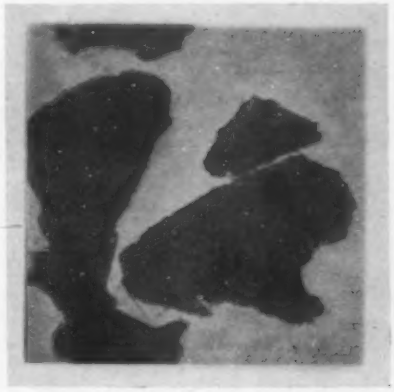
"Examples of differences in abrasiveness between six commercial high-

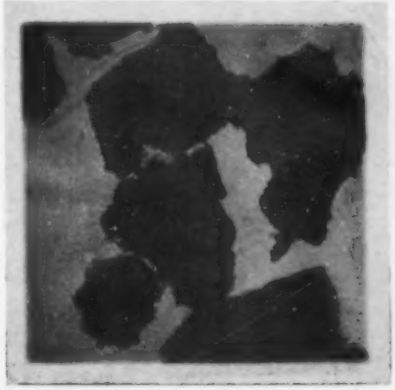
ABRASION TESTS OF LIME HYDRATES

	Type of Hydrate	Milligrams Silver Loss
Hydrate A	Soft Burned	0.3
Hydrate A	Hard Burned	1.1
Hydrate B	Soft Burned	1.6
Hydrate C	Hard Burned	4.0
Hydrate D	Soft Burned	1.2
Hydrate E	Hard Burned	6.9









Left: Electron microscope photographs of lime hydrate (hard burned hydrate)

calcium hydrates are shown (preceding page) when run for 5000 turns using a weight of 150 grams and a silver block having ¼ in. x ½ in. exposed surface:

"In view of the evident wide variation in abrasiveness between various commercial products, this factor should be given more consideration by both makers and users of hydrate.

"Whereas the silica content of a product has frequently been considered an indication of abrasiveness, we know that this is not justified. Thus, silica present as SiO_2 is extremely abrasive, whereas that present as clay (aluminum silicate) is much less abrasive. Either form of silica may contribute abrasiveness to lime when temperatures high enough to permit fusion occur during burning. With certain stones it is possible to produce a non-abrasive hydrate by soft burning the stone and separating the silica after or during hydration. Such non-abrasive hydrate can be shown to contain a significant amount of residual silica, doubtless as clay.

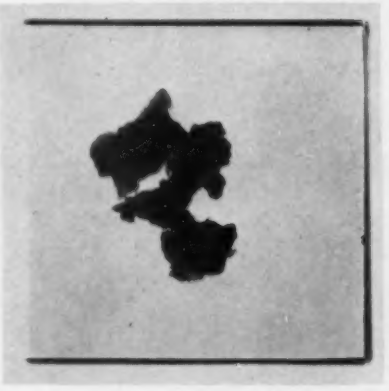
"Another specification sometimes employed to indicate relative abrasiveness, which does not appear justified, is the sieve-size specification. We have found commercial hydrates from rotary kiln plants which show 10-15 percent retained on a 300-mesh screen which have lower abrasion numbers than others having less than 2 percent. Examination of the residues has shown that rotary kiln hydrates frequently become balled or compacted together and such balls are retained on fine-mesh screens. Such balled particles may be and frequently are non-abrasive, being entirely unlike the sandy material which may be screened from other hydrates.

Hydrate Adhesion

"For certain lime hydrate applications the adhesion or bonding of the hydrate to a metallic surface becomes important. Thus, in wire drawing a satisfactory hydrate must adhere to a wire surface to assist in lubrication of the die as the wire passes through. As is known, some hydrates exhibit little adhesion and readily flake off, which renders them unsatisfactory for this application.

"In an effort to establish methods to show the comparative suitability of

(Continued on page 64)



Right: Electron microscope photographs of lime hydrate (soft burned)

CRUSHING

Floating Gravel Crushing Plant

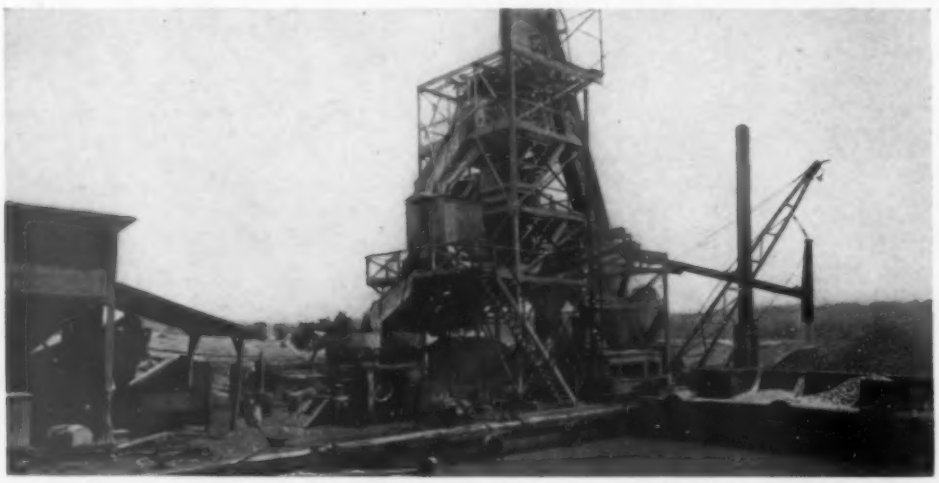
Richmond Sand and Gravel Corp. has Diesel-powered auxiliary plant to crush and screen oversize from two ladder dredges

A FLOATING PLANT to produce 100 percent crushed gravel is being operated by the Richmond Sand and Gravel Corp., at Richmond, Va. It was built to crush and size commercial gravel from oversizes rejected by two dredges which produce sand and uncrushed gravel.

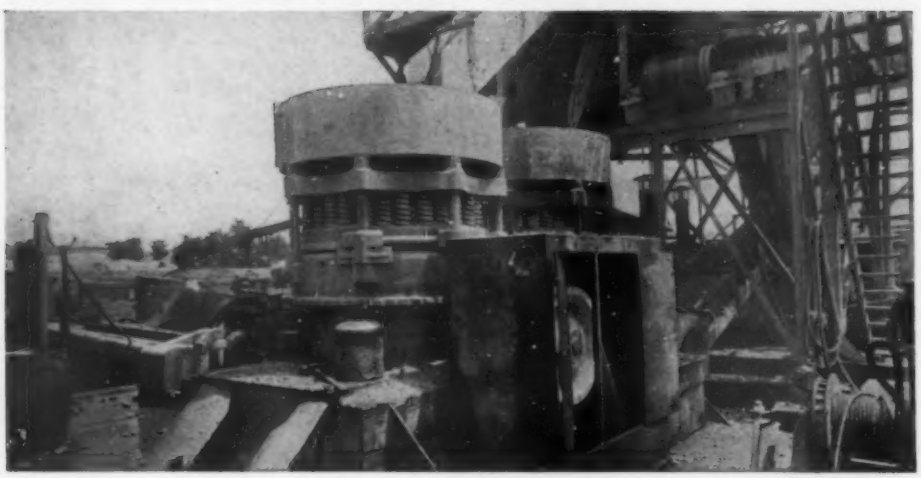
Although crushed gravel is not specified on any contracts served by the company, a good percentage of the material handled by the dredges is too large for uncrushed gravel. Until the auxiliary floating plant was built in 1939, oversize had to be handled into storage by steam-powered derricks, for possible re-handling and crushing later, or be rejected.

Location of the workings adjoins the James river, on low, gravel-bearing land, where dredging is the only practicable way to get out material. Two ladder dredges produce 3000 tons of sand and gravel per 16-hr. day, and of this tonnage, 60 percent is uncrushed gravel. A day's run will also handle 1000 tons of plus 2-in. gravel that is now crushed on the floating plant. Practically all of it is in a size range of 2- to 7-in., so the plus 7-in. boulders are rejected at the digging dredges at the site.

Finished materials, both uncrushed and crushed, are loaded directly into 500-ton barges for direct tow, six at a time, to Norfolk and other cities on the James river. Barges of the same capacity, loaded with 2- to 7-in. gravel, are towed to the crushing plant as soon as they are filled at the digging dredges. A steam-driven derrick with a 2-cu. yd. bucket, barge-mounted, is tied to the floating crushing plant to feed the gravel into a receiving hopper. The bucket is powered by a 150-hp. steam engine and a 3-drum Lidgerwood hoist.



Left: Floating plant has screening structure extending 55 ft. above deck, with Diesel engines below deck. Capacity is over 100 t.p.h. loaded into barges



Right: These two reduction crushers and the primary crusher discharge to a common belt conveyor below and a bucket elevator in background serves the screening plant on the superstructure

The floating plant is completely contained, on a 34- x 130-ft. wood hull, to crush, screen and load barges with finished material, and is equipped to develop its own power. Capacity is in excess of 100 tons per hour, 100 percent crushed material, including ordinary commercial sizes and chips.

Principal equipment on board consists of a 13-in. Telsmith gyratory crusher for the first reduction, three Tyler vibrating screens, two 36-in. Telsmith Gyrosphere reduction crushers, belt conveyors and a bucket elevator. It had to be a compact layout and represents, in producing capacity and flexibility, equipment that would be spread over a sizeable tract of land in many land-operated plants.

Gravel is handled into a 20-ton feed hopper near one end of the hull by the derrick clamshell and is fed into the primary crusher by a 14-ft. 4-in. Link-Belt pan feeder. The feeder is 30 in. wide and inclined at 12 deg.

All three crushers are arranged in a row, on the center-line of the hull, so that one 24-in. belt conveyor can handle the discharges from all three. Over this belt, stone from the primary crusher is carried to a Link-Belt bucket elevator, 56-ft. centers, for transportation to the top screen. The elevator stands nearly vertical and has 80 buckets.

There are two 4- x 10-ft. three-deck vibrating screens and one 4- x 8-ft., double-deck. All three are Tyler Niagara. The 4- x 8-ft. screen is used only in producing gravel chips. In connection with the screens and the two reduction crushers there is a rather ingenious surge hopper which is the means of selecting gravel sizes, as they come from the screens, for feed into the crushers or for loading out to barges.

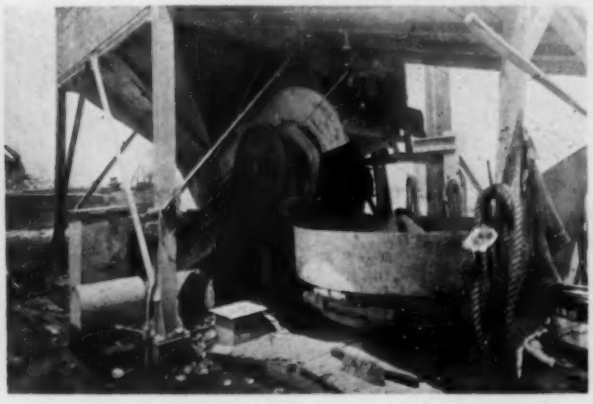
The hopper has very little capacity but has partitions inside it, into which four separate sizes from the screens may be run on each side through chutes and kept separate. At the bottom of each pocket there is a discharge gate which may be opened by a pull chain, if that size of material is to be loaded into a barge. This material would then be carried over a 24-in. belt conveyor, 35-ft. centers, to the barge-loading chute where a stream of water is used to stimulate flow. The other sizes from either half of the hopper would overflow the partitions inside to chutes feeding the two crushers.

Thus, if there is a big demand for ¼- to 1-in. gravel, all material over that size will be re-crushed and the fines and water flumed back into the lake. If chips are to be made, the lower screen will separate out that size and waste the fines. In making chips, one of the crushers would have a fine bowl and the other would operate with a coarse bowl. The plant can load three barges simultaneously.

Power for the entire operation is developed by two 180-hp. Fairbanks-Morse Diesel engines down inside the hull of the barge. One generates electrical power for all the small motors and drives the primary crusher through V-belt, the other is V-belted to the two reduction crushers.

The plant is equipped with spuds to hold it stationary, and has two Clyde single-drum hoists for spotting the barges. R. A. Matthews is vice-president and general manager of the Richmond Sand and Gravel Corp. and G. G. Reade is superintendent of all the dredging operations. G. H. Bacot, vice-president of the Arundel Corp., Baltimore, Md., of which the Richmond company is a subsidiary, designed the floating crusher plant.

Derrick bucket discharging gravel into hopper on floating plant. Barges of gravel are towed alongside for direct unloading and for loading finished product



Left: Gravel is fed into hopper on left by steam-driven derrick bucket and fed out to primary crusher. Right: Inclined pan feeder feeding gravel into primary crusher which has belt conveyor below it

BLENDING

Centralized Storage for Materials

Part 3: Accurately controlled system of blending from selective quarrying to kiln feed

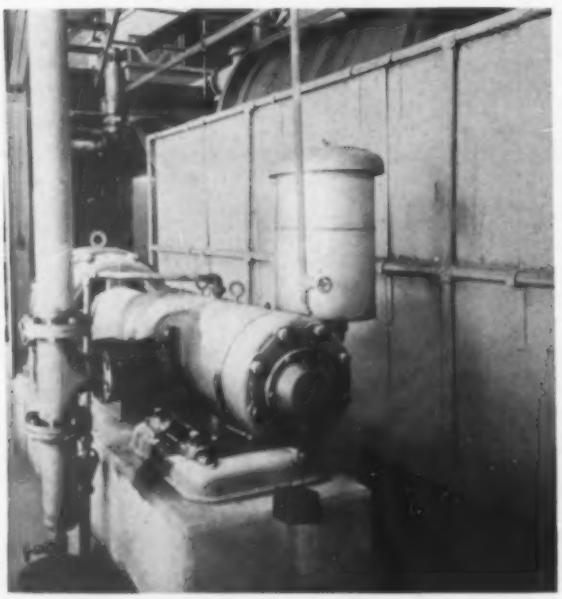
BLENDING of the kiln feed materials is an important operation at Lehigh's Alsen, N. Y., plant, due to variations in the raw materials that are quarried. Composition of the materials starts in the quarry, where selective practices are employed.

Top of new silos showing cement distribution lines. Dust collector vents silos

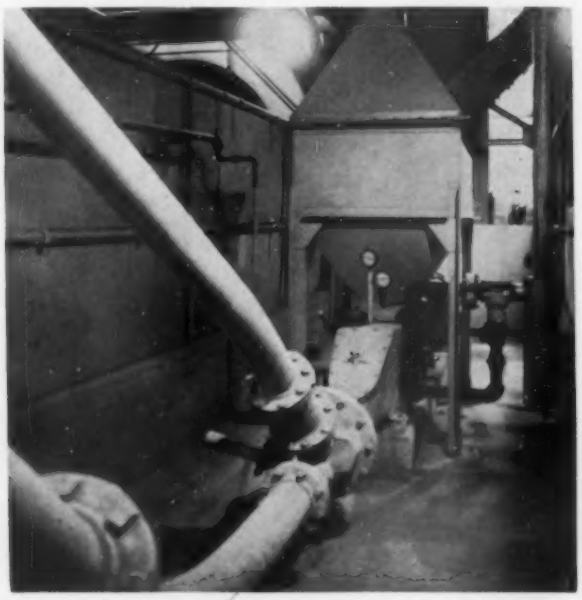
Three formations of chemically different rock are being excavated in one quarry near the plant, all of the lower Devonian geologic age. One is the Beecraft high calcium carbonate limestone (90 to 98 percent) which contains enough iron for making modified cements without the addition of pyrites. A second variety, the Kalkberg limestone, is also high grade. It contains chert inclusions and always occurs with Beecraft stone. The third is the New Scotland, an impure limestone that contains iron, silica and alumina in sufficient quantity so that the addition of clay to the mix is sometimes unnecessary. Another high calcium limestone, low in iron, is occasionally quarried in making certain cements. This variety belongs to the Manlius formation and is quarried ¾ mile from the plant.

Raw materials for milling are stored under cover next to the grinding plant and provision is made there for storing the types of stone separately and combining proportioned amounts of each into hoppers from which the grinding mill is fed. Selection of the kinds of stone, for separate handling into the storage bins, is done in the quarry in loading cars.

A continuous face 70 ft. high is under excavation in the quarry and the several kinds of stone are brought down on the quarry floor at different locations. The shovel works first in one section of the quarry, then in another. Three well drills sink 6-in. vertical blast holes and the average shot will bring down about 50,000 tons of

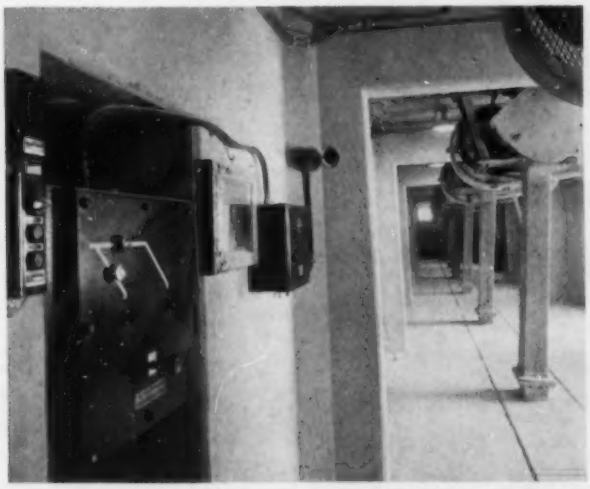


This unit air compressor serves material pump. Each pump in plant has its own compressor of this type



One of the pumps used to pump cement from air separator either into new silos or old stockhouse

Raw material proportioning scales: to the left for rock, and to the right for clay. Similar equipment is used for clinker and gypsum proportioning for finish grinding



Interior of blending bins building. Note number of draw-off points from seven bins (also another row of seven) into screw conveyor and thence to elevator into any one of four final bins

stone. Some drilling is done with a wagon drill.

Crushing

Two electric shovels with 2½-cu. yd. dippers load the stone into 10-cu. yd. roller-bearing, side-dump quarry cars. These are hauled to the crushing plant by either of two 23-ton, 150-hp. Diesel-electric locomotives in trains of nine cars. A pneumatic lift dumps the cars of stone into a 42-in. gyratory crusher which is driven through V-belt by a 250-hp. electric motor and has a capacity of 400 tons per hour at a 5-in. setting. The stone is then put through a reversible hammer mill, the transfer between crushers being accomplished by a 48- x 60-in. vibrating feeder on to a 54-in. belt conveyor followed by a bucket elevator. The hammer mill is driven by a direct-connected electric motor and is in closed-circuit with a 4- x 10-ft. double-deck vibrating screen, through a belt bucket elevator. The crushing plant is designed to produce 250 tons per hour of minus 1¼-in. stone, usually taken direct from the screen for delivery to the mill storage bins. An 800-ton caternary bin in the crushing plant serves as additional reserve.

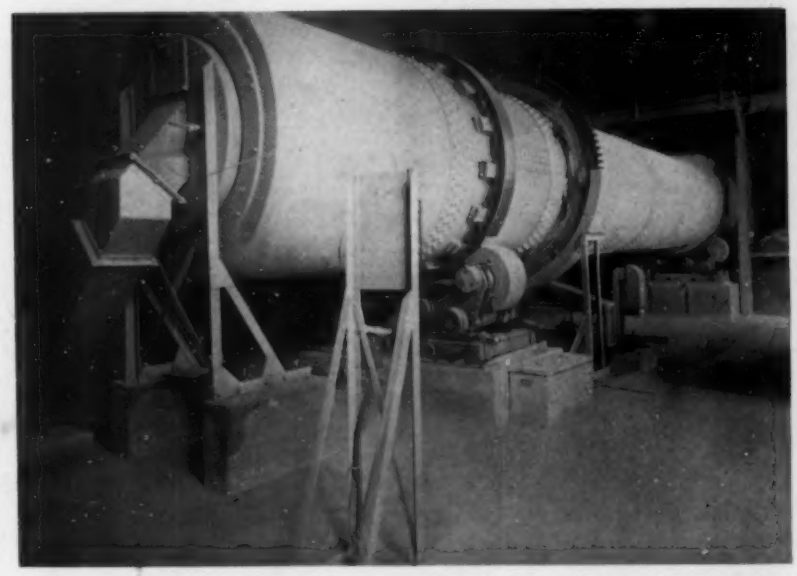
Four 24-in. belt conveyors in sequence, with a total length of 1777 ft., deliver the stone into covered storage where a tripper drops it into separate designated bins. Samples of stone are taken from the belt for testing.

Clay Handling

A source of clay near the plant is being excavated for adjusting the alumina-iron ratio in the mix when needed. The amount used averages three percent. An electric shovel loads the clay into trucks which deliver the material to the plant, where it is first put through a granulator, which is nothing more than a pug mill, which breaks up the lumps. An 18-in. belt conveyor, 67-ft. centers, then delivers the clay into a 7-ft. 6-in. by 57-ft. rotary dryer.

This dryer is not intended to remove all the moisture from the clay, since the clay together with correct proportions of stone are later ground together in a mill that dries the material during the process of grinding. Just enough moisture is removed to facilitate the storing and handling of the clay.

The dryer is oil-fired, with the hot gases passing through the dryer twice, down the center and back counter-current to the clay travel. Temperature is held at 700 deg. F. at the mid-point of the dryer. Dried clay is carried by a 16-in. screw conveyor to a two-roll disintegrator, and is then conveyed by a 12-in. screw conveyor and a bucket elevator, first to a magnetic separator and then placed into storage. *(Continued on page 63)*



Rotary clay dryer which dries clay just enough to handle and prepare it for grinding with the stone in mill. To the left is the discharge end, showing temperature recorder.

CEDAR BLUFF QUARRY

Princeton, Kentucky, converts open-face to mine

By BROR NORDBERG

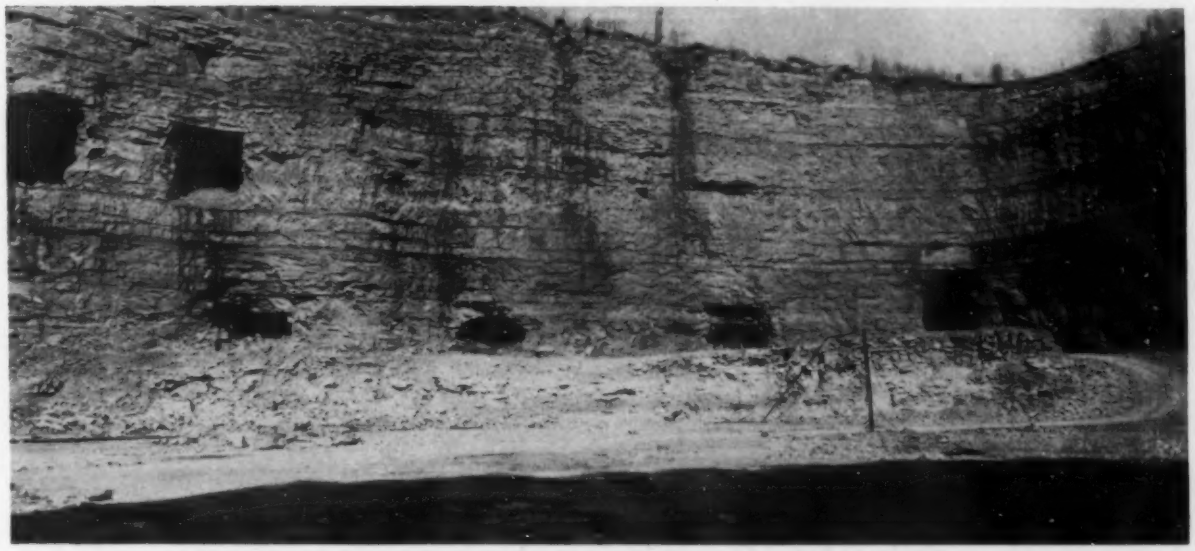
Interior of mine which will be developed to a 40-ft. ceiling, leaving pillars for support

IN THE STATE OF KENTUCKY, quite a number of crushed stone producers have changed from open quarries to mining in recent years. The high cost of removing overburden and a desire to get out cleaner, dry stone are the reasons.

Cedar Bluff Quarry, Princeton, Ky., opened a mine three years ago that is, in general, representative of the type of limestone mining operations throughout the State. Horizontal headers are driven into an existing quarry face, flush with the quarry floor, and supporting pillars are left standing to divide the mine area into working rooms.

Until the mine was opened, limestone was quarried from a face well over 200 ft. high, that contained layers of physically-different highly-stratified rock separated by shaly seams of various thicknesses. Some of the stone is oölitic, characteristic of the Ste. Genevieve limestone. In contrast to fine-grained dark stone, there are ledges of dense, hard grey-colored rock and stratifications of partly oölitic rock. Soapstone occurs at the top of the ledge, and considerable sandstone and shale had to be removed with the overburden.

Drilling toe holes with wagon drills in quarry ledge outside mine. The same drills used for drift holes and stoping inside the mine



At one time this ledge which is over 200 ft. high was quarried by blasting down the entire face. Now most of the stone is mined through entrances of the kind shown

At one time the entire face was blasted down and, more recently, 60-ft. benches were worked, using well drills. Most of the shaley material would find its way into the fines in the screening plant and would be given away for railroad fill or other uses. Mining was started when operations were carried far enough to provide a height of shale-free stone sufficient for opening a mine with a sound ceiling.

Corridors 35 ft. in width are being driven, leaving scattered pillars 50 and 85 ft. in width. Eventually the ceiling will be 38 ft. high, to a natural parting, but the headings are first driven to a 22-ft. ceiling and the additional 16 ft. is later brought down.

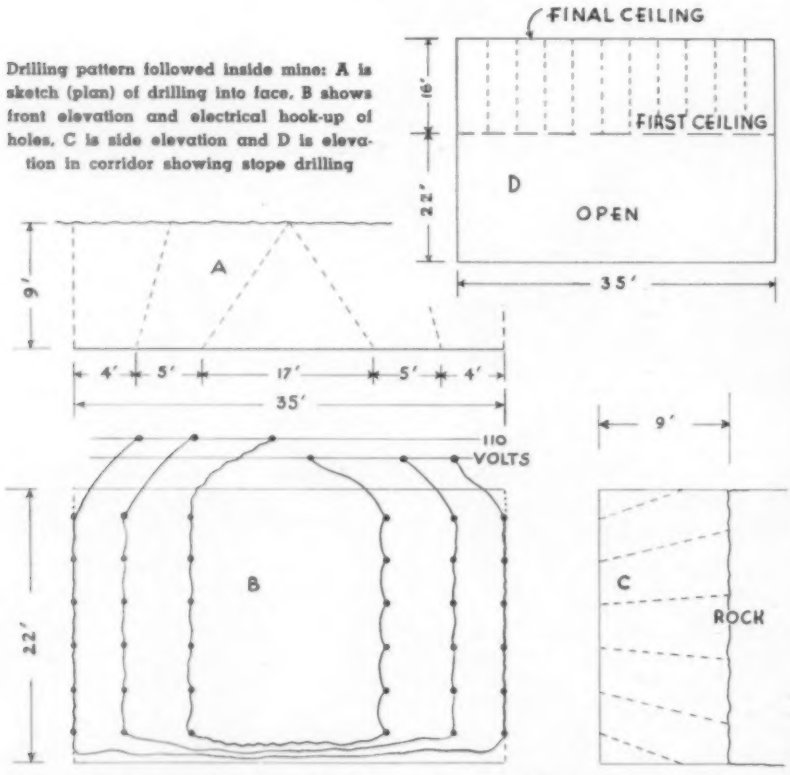
Drift holes to extend the headings are supplemented by some snake-holing, in making a mine floor. Stope holes are driven to a vertical depth, upwards, of 16 ft. in dropping the ceilings. All the drill holes are driven by model DR Cleveland wagon drills mounted on rubber tires, to a minimum diameter of about 2 in. There are four drills in service at the plant.

A definite pattern of drilling has been standardized, which is very similar to the method used successfully by the Kentucky Stone Co. in several of its limestone mines. Heading shots are designed to yield about 500 tons each, which means the shooting out of a vertical section 35 ft. wide, 22 ft. high and to about 9 ft. of rock thickness.

Six vertical rows of holes are driven to accomplish this, each consisting of six holes spaced almost equally from top to bottom in the row. The two outside rows, 35 ft. apart (the width of the headings), converge very slightly. Four feet toward the center line, from these rows, two vertical rows are converged about 30 deg. toward the center line. Five feet closer to the center line from these two rows, the third pair converge about 45 deg. to meet 9 ft. in from the face. These two rows of holes are 17 ft. apart. The holes not only converge toward the axis of a corridor but the top holes are directed upwards and the bottom ones in a downward direction as shown in the sketch. A seventh hole in each vertical row, near the mine floor, is sometimes needed to blast out heels. These holes slope down below the floor level, like snake-holes.

All these holes are loaded nearly full with 1¼- x 8-in. Hercules No. 1 Gelamite and are capped with two feet of paper cartridges filled with fine screenings, which are tamped to break them open in the holes. Exploders are inserted in each hole after the bottom three sticks of dynamite are in place. A shot is connected up so that there are three delayed explosions in sequence. First, the two vertical rows of holes near the center line of the heading are shot simultaneously, to open a wedge in

Drilling with jackhammer in open quarry outside mine, in producing agricultural limestone



Drilling pattern followed inside mine: A is sketch (plan) of drilling into face, B shows front elevation and electrical hook-up of holes, C is side elevation and D is elevation in corridor showing stope drilling

the center and provide faces for the succeeding blasts. Then the two rows angled 30 deg. toward the center are shot simultaneously, throwing the stone toward the center, and this blast is followed quickly by simultaneous detonation of the two outside rows. The holes in each pair of vertical rows shot simultaneously are wired together, from bottom to top, and connected to a 110-volt ordinary lighting circuit. When the switch is thrown, 12 holes are fired in the center, followed by a second 12 holes and then by the last group of 12, to bring down the estimated 500 tons.

A platform of oak timbers is built up on an old truck chassis to support the wagon drills while drilling the higher holes. It also serves to drill vertical stope holes upward into the ceiling to bring down an additional 16 ft. to raise the mine roof to 38 ft.

Stope holes are spaced on 5-ft. centers, in both directions, and are loaded with No. 2 Hercules Gelamite, tamped with paper wadding. They are wired together in multiple and fired, one row at a time, by electric blasting caps when the lighting circuit switch is thrown.

A special apparatus was developed by the mine superintendent for scaling the mine ceiling and loading the stope holes. An old heavy truck chassis was fitted with a 33-ft. steel boom and platform from which two men can work. A hand-operated hoist raises or lowers the boom and the working platform on the end of it, which assumes a horizontal position. A third man carries blasting supplies and tools up the boom and starts the truck engine to spot the men at other drill hole locations. The yield is 2- to 2½- ton of stone per lb. of dynamite. Very little secondary drilling and blasting is needed in the mine, usually only in connection with the ceiling shots. Four Ingersoll-Rand and one Gardner-Denver jackhammers do all the secondary drilling needed around the plant. A 30 percent semi-gelatine dynamite in 1- x 4-in. cartridges is used for secondary blasting.

Loading ceiling drill holes from steel boom on truck

This limestone formation is being excavated selectively, in the production of agricultural limestone. Outside the mine is a bed of high calcium limestone that is unusually soft and easy to crush at high capacity. A 38-ft. ledge of this rock is being quarried.

Vertical wagon drill holes, 4½ ft. apart with a 4½-ft. burden are drilled 20 ft. deep from the top of the ledge. The other 18 ft. of ledge is drilled from the face side, with horizontal holes spaced apart four or five feet vertically and converging inwardly, somewhat along the pattern in drilling mine headings. These holes are drilled according to the condition of the face and therefore each shot must differ. In this stone the holes are drilled at the rate of 30 to 35 ft. per hour. Drift holes and the vertical holes are fired simultaneously from a lighting circuit in the same way that mine blasts are shot. Three lines of vertical holes, with 150 to 200 holes, might be fired at once along with the firing of the drift holes directly below the face involved, to bring down 3000 tons.

Stone is loaded, from the quarry and in the mine, by ¾-cu. yd. 20-B Bucyrus-Erie electric shovels into trucks for plant delivery. At present, the mine workings extend a distance of 900 ft. into the quarry face and are ventilated by the natural circulation of fresh air. All holes are drilled with 1¼-in. hollow, round drill steel which are sharpened at the plant. du Pont No.6 instantaneous blasting caps are used exclusively for all blasting.

Drilling equipment is served by a 17- x 10¼-in. Sullivan electric-driven air compressor and a 365 Gardner-Denver Diesel-driven portable machine, synchronized to maintain the required pressure in a common air receiver. Production of the Cedar Bluff plant is rated at 175 tons per hour.

W. T. Sparks is owner and general manager of Cedar Bluff Quarry, I. T. Sholar is superintendent and C. Stallins is the mine foreman.

Kiln Design for Alternate Fuels

Different fuels might be used in lime kilns, either simultaneously or at different times, in the event of fuel shortages during the winter

By VICTOR J. AZBE

IT WILL BE GENERALLY CONCEDED that natural gas is about the ideal fuel. It lends itself readily and quickly to many applications, is easily and precisely controlled and, considering its advantages, is so cheap that demand for it is continually increasing, especially during the present feverish war activity.

By increasing pumping pressures and number of pumping stations, the pipe line capacities for delivery of gas from the fields were greatly increased, but not so much as to eliminate the threat of serious shortage during the colder periods of next winter. When that time comes, the War Production Board is likely to dictate who is to get the available gas, and some of the lime plants may be either shut off or curtailed in its use.

Forced to Convert from Natural Gas to Coal

As an example, the Beachville, Ont., Canada, plant was changed from natural gas to coal on order of the Canadian Government, but the amount of natural gas available in Ontario as compared with the United States, is not very large; here the problem is naturally one of sufficiency during the colder winter months.

The answer is plainly that there is not enough gas to go around and some plants are certain to be shut off, and not only shut off for the few days of extreme zero weather, but likely for periods of several weeks duration.

Natural Gas Supplemented with Producer Gas

In some plants on initial conversion to gas, it was merely piped into the old furnaces and in such cases it is a simple matter to go back to the previous fuel and system of firing. But in all such cases neither gas nor the previous fuel are used to the best advantage.

It is now generally recognized that the proper way to introduce natural gas is through a center burner, which by this time has become highly evolved. Fig. 1 shows such a center burner operation, supplemented however by side burners which can be either supplied with natural gas or with artificial gas from semi-gas producers.

Through the South particularly, wood is still cheaply available, and the sketch presented shows an installation intended for wood burning primarily, although coal could also be readily used.

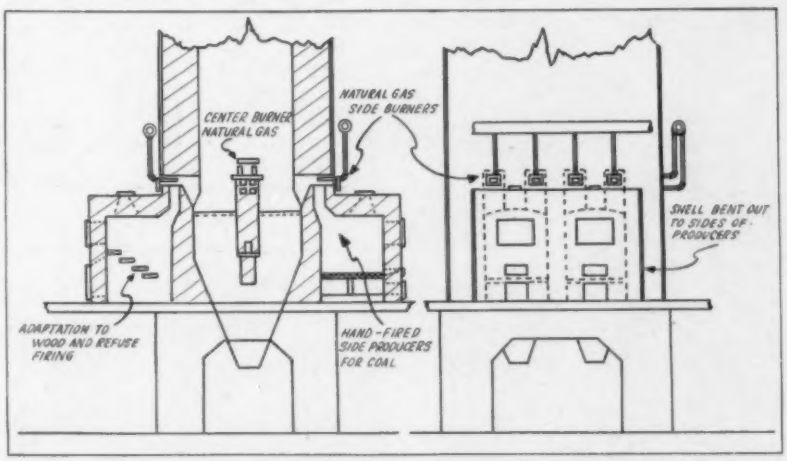
However, there is such a thing as using two fuels simultaneously. If even a little natural gas would be available it could be introduced through the center burner while the side burners would be supplying artificial gas from the producers, and in this manner the full kiln capacity could be maintained until the full quota of natural gas would be available.

When no natural gas is obtainable the center burner as a structure would still serve a good purpose supporting the ordinarily weak middle of the lime column, and so facilitate proper trimming of the kiln.

There are other variations possible, a simple centralized gas producer for either wood and coal, supplying gas to side burners while the center burner arranged for natural gas, would be ready to go on or off at a bare moment's notice.

Shutdowns During Boom Times Must Be Avoided

Duplex systems such as this are expensive, of course, and operation is not as simple, but plants will be making lime when lime is most needed. Shut-downs, particularly shut downs when there is a booming market, are terribly expensive and hurt a concern in more ways than merely in immediate profit loss. Therefore all lime concerns using natural gas, particularly such as have interruptable contracts, should give the present state of affairs most careful thought. There is also a patriotic duty involved in keeping all wheels turning during the present emergency.


CENTER BURNER NATURAL GAS
NATURAL GAS SIDE BURNERS
SHELL BENT OUT TO SIDES OF PRODUCERS
ADAPTATION TO WOOD AND REFUSE FIRING
HAND-FIRED SIDE PRODUCERS FOR COAL

Kiln design for simultaneous or alternate use of different fuels

Sand Blending

By FRED C. BOND*

Simple mathematical methods of determining size distribution of washed and blended products

ONE OF THE COMMON PROBLEMS of the rock products engineer is the preparation of a material to meet certain size range specifications. This is commonly accomplished by more or less tedious cut and try methods, yielding only approximate results.

For instance, it is often necessary to remove fines by washing a crushed or ground rock in order to meet the size specifications for concrete aggregate. If the amount of fines to be removed is only approximately estimated, the size distribution of the washed aggregate may fall outside of the specified range, while specifications may be met at all sizes when more precise methods of calculation are employed.

The following equations were derived by the author to facilitate such calculations. They provide a means for determining the exact amount of material to be removed or added to meet specified size requirements, and for finding the size distribution of the resulting product. The percent weight passing all screen sizes n, is used as the basis of the calculation.

The feed, or heads, to the separating or blending operation are designated as H, and the finished product as P. H_n and P_n are used to designate the percent weight passing any screen size n in the heads and product respectively. S represents the material which is separated from or added to the heads; it is always finer than the heads by definition.

Washing

Removal of fines from a material in order to meet a given size specification is treated under this heading. The term fines is understood to include only particles sufficiently small to pass the finest screen size concerned. In other words, S_n is 100 percent for all screen sizes n which are used in the calculation.

The percent of fines to be washed from the heads in order to meet the product specification at any selected size n is designated as X, and is calculated from the following equation:

$$X = 100\left(\frac{H_n - P_n}{100 - P_n}\right) \qquad -(1)$$

After the value of X has been obtained from equation (1), the screen analysis of the resulting washed product at all desired screen sizes n is calculated from equation (2), as follows:

$$P_n = 100\left(\frac{H_n - X}{100 - X}\right) \qquad -(2)$$

The usual procedure is to select the desired percentage P_n of the washed product passing a certain screen size, and find the percent weight X of fines to be removed from equation (1). The screen analysis of the washed product is then calculated from equation (2). In case the screen analysis falls outside the specified range at any size, a slight change in the value of X may bring all sizes within the specifications.

The equations apply to the removal of fines by air separation or by screening as well by washing.

Specimen Calculation

A rock is to be ground wet to minus one-fourth inch in a rod mill, and sufficient fines washed out to meet the specifications for a concrete aggregate. The details of the calculation are shown in Table I.

Column (3) was obtained from the screen analysis of the rod mill product. The average specification at 100 mesh, P_{100}=10.5, was selected as the control point; and X, (the percent fines to be washed out) was calculated from equation (1) as follows:

$$S = 100\left(\frac{27.0 - 10.5}{100 - 10.5}\right) = 18.5$$

The screen analysis of the washed product in column (4) was calculated by substituting 18.5 for X in equation (2). This is seen to fall within the specifications of column (2) at every size, so that no adjustment of X is necessary.

The calculation shows that the specified aggregate can be obtained by washing 18.5 percent of fines from the rod mill product.

Blending

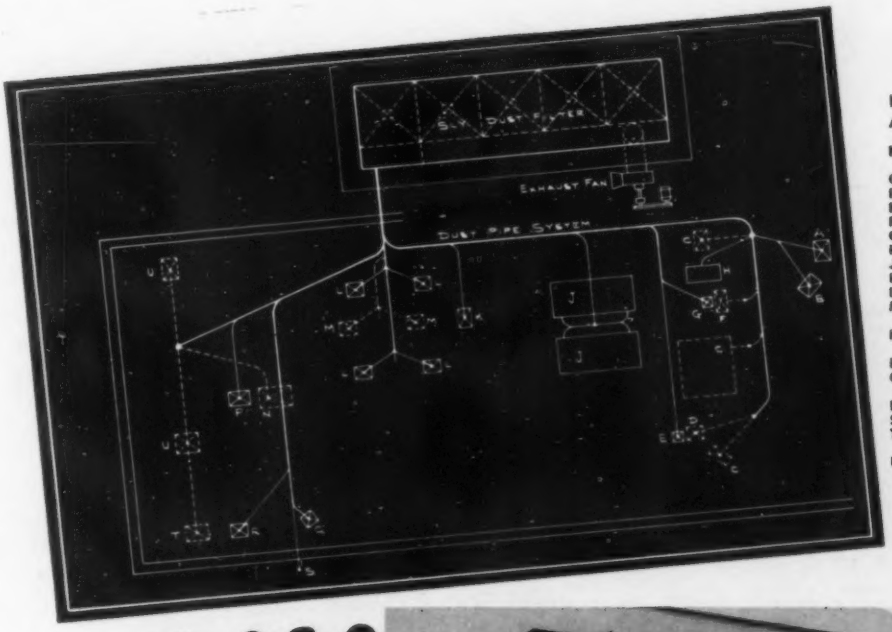
Combining two materials of different size distributions to obtain a product meeting a specified screen analysis is considered under the heading of blending. The coarser of the two materials to be combined is designated as H, the finer as S, and the blended product as P. The percents passing any screen of size n are designated as H_n, S_n, and P_n respectively. The number of parts of material S which must be added to 100 parts of material H to obtain the desired value of P_n is designated

(Continued on page 65)

TABLE I

(1) Mesh Size n	(2) Specified Percent Passing	(3) Rod Mill Product Percent Passing Hn	(4) Washed Product Percent Passing Pn
4	95 to 100	96.0	95.2
8	70 to 90	87.3	84.4
14	50 to 70	70.5	63.8
28	30 to 50	51.0	39.9
48	15 to 30	37.1	22.8
100	8 to 13	27.0	10.5
200	0 to 6.5	19.5	1.2

*Head of the Minerals Research Laboratory, Allis-Chalmers Manufacturing Co.



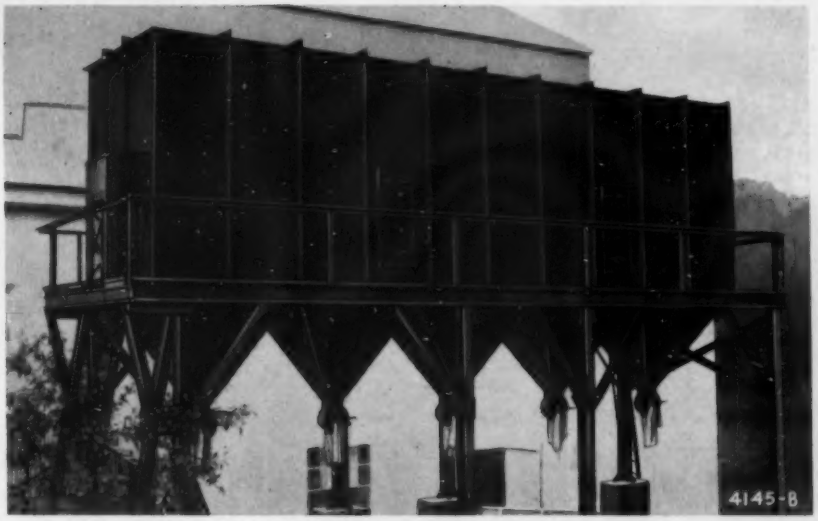
LEGEND

A Discharge belt conveyor to scalping screen
B Discharge belt conveyor to storage bin
C Discharge of roll crushers
D Boot of bucket elevator
E Head of bucket elevator
F Boot of bucket elevator
G Head of bucket elevator
H Vibrating screen
J Two double vibrating screens
K Head of bucket elevator
L Magnetic separators
M Discharge magnetic separators to belt conveyor
N Discharge belt conveyor to bucket elevator
P Head of bucket elevator
Q Discharge bucket elevator to belt conveyor
R Head of bucket elevator
S Bulk carloading
T Discharge belt conveyor to bucket elevator
U Discharge of "feeders" to belt conveyors

SLY

DUST CONTROL

IMPROVES WORKING CONDITIONS— UPS PRODUCTION



★ This Sly Dust Control System, for a large feldspar producer, collects dust caused by handling feldspar, particularly in its crushing, screening, conveying, storage and loading as indicated by the accompanying sketch.

Prior to the Sly installation, the dust presented a serious problem. The company consulted us. Definite air volumes were determined and the system installed accordingly—resulting in improved working conditions and increased production.

Sly Dust Filters offer certain exclusive advantages which help enormously in efficient operation:

1. Greater filtering capacity because of more filtering cloth
2. Taut bags (patented) save power and improve dust removal
3. Bags more easily replaced
4. Automatic control (any degree) minimizes or entirely removes the human factor
5. Simpler shaker mechanism results in savings in maintenance and operation

Write us fully. We shall analyze your problems and tell you exactly what can be accomplished. Sly Dust Control pays for itself.

THE W. W. SLY MANUFACTURING CO.

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★ ★

CEMENT REGULATIONS—PRICES

Will probably serve as model for other rock products price regulation

THE FOLLOWING regulations went into effect August 23. Paragraphs 2 and 3 have been rewritten to avoid a general misunderstanding. To provide for revision of these two paragraphs, their application was suspended until September 20. In the regulations given below these revisions have been substituted for the original text. The regulations, in part, are as follows:

§ 3033.1 **General Limitation Order L-179**—(a) **Restrictions**—(1) **Manufacture.** On and after twenty days subsequent to the date of issuance of this order, no person shall manufacture any portland cement except portland cement which conforms with one or more of the following specifications as such specifications exist on the date of issuance of this order:

(i) Federal specifications: Emergency Alternate Federal Specification for cement; Portland-E-SS-C-191b, dated June 5, 1942;

(ii) Federal specifications: Emergency Alternate Federal Specification for cement; Portland-E-SS-C-201a, dated June 5, 1942;

(iii) Federal specifications: Emergency Alternate Federal Specification for cement; Portland-E-SS-C-206a, dated June 5, 1942;

(iv) American Society for Testing Materials specifications: Emergency Alternate Specification for Portland Cement A.S.T.M. Designation EA-C 150-Type I, dated June 6, 1942;

(v) American Society for Testing Materials specifications: Emergency Alternate Specification for Portland Cement A.S.T.M. Designation EA-C 150-Type III, dated June 6, 1942;

(vi) American Society for Testing Materials specifications: Emergency Alternate Specifications for Portland Cement A.S.T.M. Designation EA-C 150-Type II, dated June 6, 1942.

(2) **Storage by manufacturers.** On and after September 24, 1942, no manufacturer of portland cement shall set aside, or continue to set aside, except during the testing period of such cement, any storage space for the storage of portland cement for the exclusive use of any one or more departments, agencies or governmental corporations of the United States or for the exclusive use of any one or more persons; but such manufacturer may set aside storage space for portland cement tested in accordance with the provisions of this order for the use in common by all departments, agencies and governmental corporations of the United States, or for the use in common of all other purchasers of such tested cement.

(3) **Requirements for testing.** A purchaser of portland cement may require tests of such cement, but such tests may only be made in accordance with "Federal Specifications: Emergency Alternate Federal Specifications for Cement; Portland—Dated June 5, 1942, E-SS-C158a" or "American Society for Testing Materials Specifications C 77-40." Such tests shall be made only by a laboratory selected by the manufacturer of such cement, which laboratory, however, shall be either the National Bureau of Standards or a laboratory designated by the National Bureau of Standards.

Exemptions

(b) **Specific exemptions.** The provisions of this order shall not apply to portland cement manufactured and stored pursuant to orders or contracts for any cement:

(1) To be used in the following named projects under the direction or control of the United States Bureau of Reclamation:

(i) Boise Project — Anderson Ranch Dam—Boise, Idaho;

(ii) Central Valley Project—Kennett Division—Redding, California;

(iii) Central Valley Propect—Friant Division—Friant, California;

(iv) Davis Dam Project—Kingman, Arizona;

(2) To be used in the following project under the direction or control of United States War Department, U. S. Army Engineer Corps:

(i) Norfolk Dam—Arkansas.

(3) To be used in the following projects under the direction or control of the Tennessee Valley Authority:

(i) Fontana Dam — Fontana Dam, North Carolina;

(ii) Douglas Dam—Rural Station, Jefferson City, Tennessee;

(iii) Fort Loudon Dam — Lenoir City, Tennessee;

(iv) Kentucky Dam—Gilbertsville, Kentucky;

(v) Apalachia Dam—Farner, Tennessee;

(vi) Ocoee No. 3 Dam—McFarland, Tennessee;

(4) To be used in oil wells under conditions of high temperature, such cement being commonly known as "oil well cement";

(5) To be used pursuant to the specific authorization of the Director General for Operatons.

Records, Etc.

(c) **Records.** All persons affected by this order shall keep and preserve for not less than two years accurate and complete records concerning inventories, production and sales.

(d) **Audit and inspection.** All records required to be kept by this order shall, upon request, be submitted to audit and inspection by duly authorized representatives of the War Production Board.

(e) **Reports.** Each person to whom this order applies shall file with the War Production Board such reports and questionnaires as said Board shall from time to time specify.

(f) **Violations.** Any person who wilfully violates any provision of this order, or who, in connection with this order, wilfully conceals a material fact or furnishes false information to any department or agency of the United States is guilty of a crime, and upon conviction may be punished by fine or imprisonment. In addition, any such person may be prohibited from making or obtaining further deliveries of, or from processing or using, material under priority control and may be deprived of priorities assistance.

(g) **Appeals.** Any person affected by this order, who considers that compliance therewith would work an exceptional and unreasonable hardship upon him, may apply for relief by addressing a letter directed to the Director General for Operations, Social Security Building, Washington, D. C., setting for the pertinent facts and the reasons why such person considers that he is entitled to relief. The Director General for Operations may thereupon take such action as he deems appropriate.

(h) **Applicability of other orders.** The provisions of Priorities Regulation No. 1 (§ 944.14, **Inventory restrictions**) shall not apply to this order and all transactions affected thereby. Insofar as any other order issued by the Director General for Operations, or to be issued by him hereafter, limits the use of any material to a greater extent than the limits imposed by this order the restrictions of such other order shall govern, unless otherwise specified herein.

(i) **Communications.** Reports to be filed and other communications concerning this order shall be addressed to the War Production Board, Building Materials Branch, Washington, D. C., Ref: L-179. (P.D. Reg. 1, as amended, 6 F.R. 6680; W.P.B. Reg. 1, 7 F.R. 561; E.O. 9024, 7 F.R. 329; E.O. 9040, 7 F.R. 527; E.O. 9125, 7 F.R. 2719; sec. 2 (a), Pub. Law 671, 76th Cong., as mended by Pub. Laws 89 and 507, 77th Cong.)

The A.S.T.M. specifications referred to are identical with the corresponding federal government specifications. An abstract of their provisions was published in ROCK PRODUCTS, August, 1942, pp. 88-92.

Price Regulations

On September 21, the Office of Price Administration issued a lengthy Maximum Price Regulation 224—Cement, which covers in detail the method of determining maximum selling prices. This O.P.A. order supersedes No. 188, and was effective September 23. Following are some of the more important provisions:

1346.104. **Maximum prices for sales and deliveries of cement by manufacturers**—(a) **Maximum prices for cement sold by a manufacturer and shipped within its normal market area.** The maximum price for American Society for Testing Materials Types 1 and 2 portland cement sold by a manufacturer and shipped within its normal market area, whether the shipment is made f.o.b. mill or on a delivered price basis, shall be such that the cost to the purchaser at the destinations for like quantities and classifications of cement similarly packaged is not in excess of what it was or would have been to such purchaser for a delivery to such purchaser completed between March 1 to 15, 1942. Such price shall be calculated upon the basis of the prices, pricing practice, freight practices, trade discounts, charges (including package charges), allowances, and deposits (other than deposits on cloth bags which may be required in a reasonable amount so long as the refund equals the deposit) most favorable to purchasers in effect, published, listed, or quoted by the seller during the period March 1 to 15, 1942, but upon the basis of the freight rates in effect at the time of any shipment made subsequent to Sept. 23, 1942.

(1) The differentials from the price of American Society for Testing Materials Types 1 and 2 portland cement which prevailed on March 15, 1942, with respect to American Society for Testing Materials Type 3 portland cement (high early strength cement), white cement, oil-well cements, masonry cement, and other cement, shall be added to or subtracted from, as the case may be, the maximum selling prices established under this paragraph for American Society for Testing Materials Types 1 and 2 portland cement, to determine the maximum prices for such other cements.

(2) The maximum prices established under paragraph (a) of this section shall be subject to cash discounts under conditions as favorable as were offered by the seller during the period March 1 to 15, 1942: **Provided,** That during the period of the war emergency a reasonable period of grace sufficient to permit

(Continued on page 106)

Blending

(Continued from page 55)

Storage for all the raw materials as well as clinker, gypsum and coal for firing the kilns is in one centralized storage area, 80- x 278-ft. with a 26-ft. retaining wall, adjoining the grinding building and the kiln building. An overhead travelling crane with a 3-cu. yd. clam places the various materials into hoppers, as needed, for withdrawal into the plant.

The crane operator is instructed to put certain percentages of the several kinds of stone into a feed hopper and clay into another, from which stone and clay are proportioned into the grinding mill. After grinding into kiln feed fineness, the product is pumped into blending tanks for further correction. An 8-in. F-K pump is supplied with compressed air at 20 p.s.i. from a 284 c.f.m. individual rotary air compressor. Individual compressors of this type are used throughout the plant for all similar material handling pumps, all of which carry different line pressures. Samples are taken of the stream going into each blending tank and tested to determine how the materials are to be blended.

Final correction of kiln feed is accomplished by a system of double-blending. The plant has only one raw grinding mill, a compact grinding circuit, which in its operation does not inter-blend to the extent that several grinding stages would. The system adopted is much more effective in eliminating deviations in composition than the ordinary simple blending.

There are 14 blending tanks, in two rows of seven each, with a combined capacity of 100,000 cu. ft. Five in each row, ten in all, are receiving tanks, each of which holds material that has been analyzed. The four tanks on one end of the group are used for re-blending before pumping the material into the kiln feed bins.

Having determined which tanks of material should be blended, connections are made from the separate tanks to two 16-in. screw conveyors, 84 ft. long, set in the floor, one under each row of tanks, which transfer to cross screw conveyors into an elevator filling any of the four final blending tanks. Material is usually drawn from a minimum of four tanks at a time to fill one of the four final tanks. Each of the four tanks contains material to a different level when withdrawing from them to fill the kiln feed tanks. All four are drawn from, simultaneously, to screw conveyors feeding an 8-in. F-K pump which delivers the blend into either of two kiln feed bins each of 2050 cu. ft. capacity.

Amsco "Counterflow" Dredge Pump and Amsco-Nagle Water Pump *Used on This Dredge*

The Consolidated Gravel Company of Columbus, Georgia have been continuous users of Amsco manganese steel dredge equipment since they established their operations in 1938. In 1941 they acquired the dredge pictured (A-307) which is equipped with a 10" Amsco "Counterflow," type H-CF, form 40, Dredge Pump (A-305). It is directly connected to a 400 h.p., 514-505 r.p.m. electric motor.

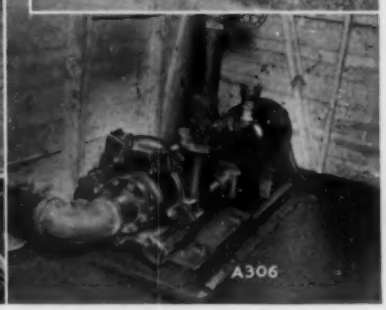
The "water ends" of Amsco dredge pumps are made of impact and abrasion resistant 13% manganese steel, "the toughest steel known," to begin with; and, in addition, those pumps embodying the "Counterflow" feature minimize wear through the forced circulation of water between the impeller shrouds and the side plate liners. In this manner, grit-laden water is kept out of clearances that would otherwise rapidly enlarge.

For auxiliary priming and to supply the clear water seal, a Type "T," frame 14, Amsco-Nagle Centrifugal Water Pump is used (A-306). It has a 3" right hand top discharge and a 4" suction, and is directly connected to a 15 h.p., 1800-1750 r.p.m. electric motor. A Penberthy water type injector is used for priming the dredge pump.

The Amsco-Nagle Pump is the first equipment started on the dredge and the last to be shut down and has operated almost continuously since the dredge was commissioned, requiring no attention other than occasional lubrication.

The Amsco "Counterflow" dredge pump is doing a highly satisfactory excavating job. The deposit, on the Chattahoochee River, contains a high percentage of choice gravel and an abundance of sharp sand. Material is pumped to portable field de-sander stations, salvaging gravel and the desired sand. Excess material and overburden are wasted back into excavated areas. The commercial material is trucked to high ground nearby for screening and storage. This method of operation keeps the discharge line within economical and practical lengths, averaging 500' of 10" pipe with a 50' vertical lift.

For a maximum service life, Amsco Pumps, cutterheads, hull and pipe line fittings are "best buys," as many gravel producers will tell you. Send for bulletin on Dredge Pumps and Fittings (Section One); or Bulletin 940 on Amsco-Nagle Centrifugal Pumps.



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Power Shovel Dippers. Dredge and Industrial Pumps
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(Continued from page 51)

hydrates for this application we employ the angle of inclination at which a steel ball rider will slide down an inclined steel plate. In operation of the test three ⅝-in. balls are clamped in a frame which is placed on a steel plate and the angle of the plate altered until the rider just slides. The steel plate is then dipped into a 5 percent suspension of hydrate, placed in an oven at 110 deg. C. to dry and the angle of slip again determined on the dry hydrate-coated plate. By this means it is possible to show the relative adhesiveness of various hydrates to steel surfaces.

"After each test the hydrate is thoroughly removed from the steel surface. The steel balls are rotated in the frame after each test to present a fresh ball surface to the plate. If the practice in a wire drawing plant is to use a "sull" or slight rusting of the wire surface prior to the lime dip, the steel plate can be similarly treated.

"Using a rider of 110 grams total weight, we found the inclination, using a polished steel plate, to be 1 14/16 in. per ft. before the application of hydrate to the metal surface. With the more satisfactory wire drawing hydrates, the inclination was 4½ to 5½ in. per ft. when a 5 per cent suspension of hydrate was employed.

Microscopic Examination of Hydrate

"Both soft- and hard-burned high-calcium hydrates have been examined under the ordinary microscope as well as under the more recently developed electron microscope in an effort to aid in our understanding of these products. The following pictures were taken at approximately 8500 diameters magnification of commercially burned and hydrated products.

"Just what constitutes a typical particle of either hydrate is somewhat difficult to state with certainty. We believe, however, that Figs. 1, 2, and 3 represent soft-burned hydrate as we have normally observed it. The particles are characterized by very irregular edges which cause the product to pack readily into aggregates such as are shown in Fig. 4. We have found very little evidence of crystalline structure in the particles, or if crystalline structure exists, the particles are so small as to show no sharp edges under the magnification employed. The particles of such hydrate normally have an aggregate size ranging between 0.5 and 5 microns, usually of fairly uniform cross-sectional area.

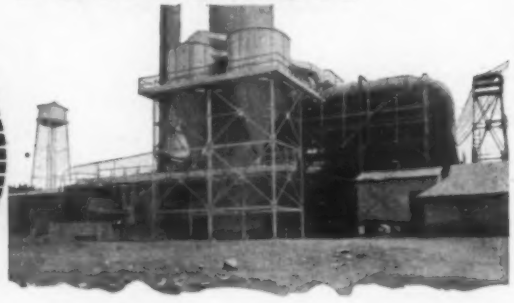
"Hard-burned hydrate on the other hand appears to consist of particles or aggregates of larger average diameter. The edges usually are sharper and there is evidence of less porosity. In some instances (see Figs. 1 and 2 above) there is evidence of plate-like crystals.

"When dry hydrate passes through a hopper or lime-feeding device it has been observed that the flow characteristics of the material may change very markedly. Thus, a free-flowing product may suddenly start to ball and cause trouble by arching in the chute.

"In a study of factors which might be responsible for this peculiar behavior we noticed that certain hydrates when shaken in a dry container develop a very pronounced electrostatic charge. The charge on some occasions is evident for a distance of 4 inches from the hydrate container. Hydrates from the same source do not always exhibit this property.

"We have been unable as yet to determine the factors responsible for this characteristic, but are continuing our investigation. We feel that a clarification of this property will prove of value to lime users."

Nature makes the Rules for DUST COLLECTION



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In the cement industry where there is longest and largest scale experience with dust collection problems and where competitive necessity has focused sharply on guaranteed performance NORBLO equipment —both Centrifugal and Bag Type—is accepted as the standard of efficiency.

The NORBLO basic principle is maximum use of air expansion and velocity drop. This is nature's "least action" way of separating dust from air. As applied in NORBLO Dust Collection equipment it means that you get highest actual dust collection, pronounced saving in power and ultimate low over-all cost of operation and equipment.

All NORBLO Dust Collection equipment is designed and completely fabricated in our own shops. Write for descriptive folders.

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DUST COLLECTION
THE NORTHERN BLOWER COMPANY
6409 BARBERTON AVENUE • CLEVELAND, OHIO

Proportioning

(Continued from page 60)

as Y, and is calculated from the following equation:

$$Y = 100 \left(\frac{P_n - H_n}{S_n - P_n} \right) \quad -(3)$$

The screen analysis of the product resulting from the addition of Y percent of material S to 100 percent of material H is calculated for all desired screen sizes n from the following equation:

$$P = \left(\frac{100\ H_n + Y\ S_n}{100 + Y} \right) \quad -(4)$$

Separating

The removal of a portion of finer material S from a coarser material H is considered under this heading. The percent weight of material S which is removed from 100 percent of material H, leaving a remaining product P, is designated as Z. The value of Z which will leave a remaining product with a specified size P_n is found from the following equation:

$$Z = 100 \left(\frac{H_n - P_n}{S_n - P_n} \right) \quad -(5)$$

The screen analysis of the product remaining after the removal of Z percent of material S is calculated for all desired screen sizes in n from the following equation:

$$P_n = \left(\frac{100H_n - ZS_n}{100 - Z} \right) \quad -(6)$$

Discussion

These six equations can be used to facilitate the size distribution calculations of practically all mixing, blending, and separation processes. They can be applied to the operation of sand washers, log washers, rake and spiral classifiers, hydraulic classifiers, wet and dry screens, air separators, mixing machines and all other devices involving the addition or separation of materials of different size distributions. Equations (1), (3), and (5) give the amount of one material which must be added to or separated from another in order to obtain a product with a specified percent weight passing a certain size opening. Equations (2), (4), and (6) give the size distribution analyses of the products obtained when the two materials are combined or separated in any specified ratio. Cases in which three or more materials are combined or separated can be resolved by considering the product of the first two as the heads for the third, this product as heads for the fourth, and so on.

The mathematical derivation of the equations is not given, since the correctness of each equation can be checked by numerical calculations from a suitable specific example.

New Plant

R. M. JONES, Madison, Ind., has recently set up a new crushing plant in Jefferson county to furnish stone for an Army proving ground.

New Crushed Stone Plant

CONSOLIDATED ROCK CO. shut down its Largo, Calif., plant temporarily and is shipping part of the machinery to Flagstaff, Ariz., where the company is building a new plant. It was expected that the Largo plant would resume operations this summer.

New Fluorspar Plant

STRIPPING and other preliminary work has been completed preparatory to the operation of a new fluorspar plant near Salida, Colo.

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Check up on the roughest, toughest track haulage jobs in the country and you'll find Plymouth Locomotives . . . delivering the peak performance essential to all-out operations.

There are mighty good reasons for this: extreme efficiency, payload power, reliable ruggedness, sufficient speed to meet stepped-up schedules.

Get all the facts and figures. They'll help you plan your production.

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PLYMOUTH LOCOMOTIVE WORKS
Division of The Fate-Root-Heath Co. PLYMOUTH, OHIO, U. S. A.

New Magnesium Plants

FIVE IMPORTANT magnesium plants have entered production in recent weeks after completion in record time.

Included is the Basic Magnesium, Inc., plant at Las Vegas, Nev., which is the world's largest with a rated capacity approximately 3½ times total United States output in 1941, according to A. H. Bunker, chief of the War Production Board's Aluminum and Magnesium Branch.

The others are the new Dow Chemical Co. plant in Texas, the Ford Motor Co. plant in Michigan, the New England Lime Co.'s Connecticut plant and the Permanente Metals Corp. plant at Mantega, Calif.

All five plants were financed and are owned by the Federal Government. The total cost approximates $175 million. The Basic and Dow plants use standard electrolytic processes while the other three use the new ferro-silicon process developed within the past year.

It took ten months for construction of the Basic Magnesium plant and four months for the ferro-silicon plants. Three more ferro-silicon plants are nearing completion and will commence operations later this year while an additional four electrolytic plants are under construction.

Completion of the program, according to the W.P.B., will place the United States far in the lead of all other countries as a magnesium producer. Before the war, Germany was the world's leader and only small quantities were produced in this country.

NATIONAL LEAD Co. has organized a new subsidiary named Megnesium Reduction Co., an Ohio corporation, to carry out the company's undertaking to produce magnesium and magnesium alloys for Government requirements.

Magnesium Reduction Co., as agent for Defense Plant Corp., will supervise the construction and equipment of a plant for that purpose and upon completion will operate such plant for account of D.P.C.

Directors and officers of the new company are all officers and employes of National Lead Co., headed by Fletcher W. Rockwell, president of National Lead.

Canadian Magnesia

ALUMINUM CO. OF CANADA, LTD., at its new Wakefield, Que., plant is producing magnesia (magnesium oxide, MgO) for the first time in Canada. Brucitic limestone from the Gatineau Valley is the raw material. The first 500 tons of hydrated lime by-product was presented to the experimental farm of the Dominion Department of Agriculture.

Projected New Cement Plant—Arizona

ELIZALDE & Co., San Francisco, Calif., whose principal business enterprises have been in the Philippine Islands, has located limestone and clay properties near Tucson, Ariz., and contemplate construction of a plant to manufacture portland cement. Diamond core drilling is in progress, and the principals are said to be attempting to obtain priorities for some necessary machinery; a part of which is said to be already on hand. Bankers are Schroder, Rockefeller & Co., New York City. The principals are F. de la Guardia, president; O. J. Gallagher, vice-president, and W. C. Stevenson, chief engineer. Mr. Stevenson is a well-known cement plant consulting engineer. He helped to design and build the Permanente plant in California and before that was with the Pacific Portland Cement Co. at San Francisco.

JOHNSON
or 20 years, in
ANT DESIGN
MAXIMUM SAVINGS IN TIME, LABOR, AND MATERIAL go with operation of a JOHNSON CENTRAL MIX PLANT. ONE MAN OPERATION AND FASTER BATCHING TIME—assure positive operating economy.
CONCENTRIC AGGREGATE CEMENT BATCHING—aggregate and cement intermingling, during discharge operation, assure 20% pre-mixing and pre-shrinkage—eliminates mixer gumming.
STEP BY STEP CONSTRUCTION—small, portable plants, for use with bag cement, are so designed that capacity may later be increased and bulk cement installed without costly change or delay.
CEMENT STORAGE IN CENTER OF AGGREGATE BIN—affords centralized control operation and greater accuracy. Cement scale and hopper is suspended within aggregate scale and hopper.
BUILT FOR ANY TYPE BIN CHARGING METHOD—
MANUAL-SEMI-AUTOMATIC OR FULL AUTOMATIC CONTROL IS AVAILABLE ON ALL JOHNSON CENTRAL MIX PLANTS.
BINS · BATCHERS · SCALES · BULK CEMENT EQUIPMENT · CENTRAL MIX PLANTS · CONCRETE BUCKETS
C.S.JOHNSON CO.
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ELEVATORS · CONVEYORS · ROADBUILDER'S EQUIPMENT · SILOS AND STORAGE BINS

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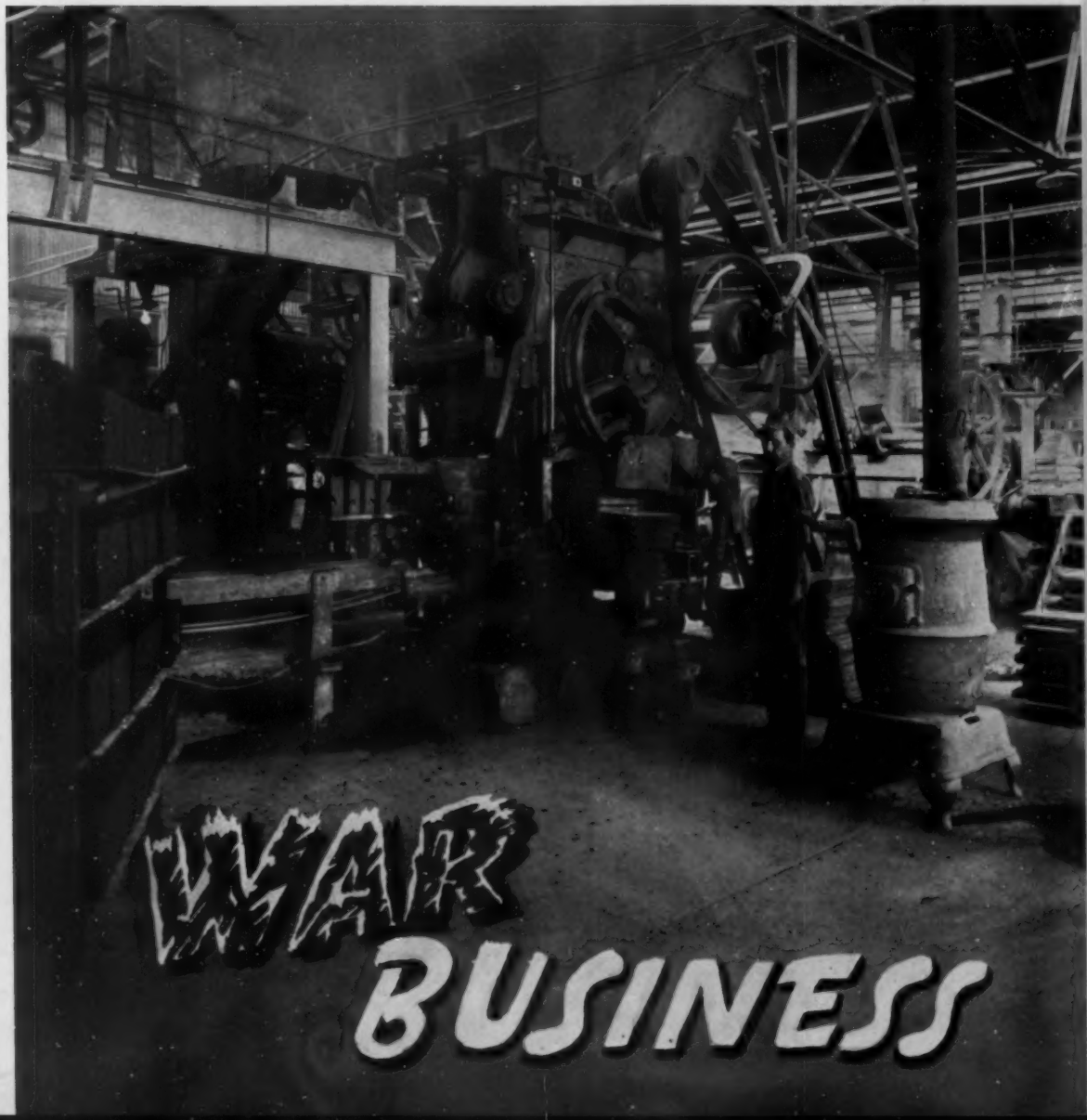
CONCRETE PRODUCTS AND CEMENT PRODUCTS



War Uses for Concrete Products

Program to conserve critical materials has good effects along with the bad. New kinds of concrete products and new uses for standard ones offer opportunities

By BROR NORDBERG

MANUFACTURERS of concrete masonry have enjoyed some record-breaking years in volume of sales up to the time of Pearl Harbor, and 1942 with all its war construction has been a very good year for the industry. Construction is now localized and is very spotty. Where war construction is going on, there continues to be a market for tremendous volume of concrete masonry units. The concrete pipe industry is going to vital war centers and setting up plants to make the pipe on the job.

Construction at the unprecedented levels of the past few years cannot continue indefinitely and sales of concrete products for building are falling off in certain areas. It just represents a return to more normal conditions for the manufacturers affected. They have been accustomed to mass production and will have to put on their coats and neckties again and get out to promote new uses for their products and sell to different markets.

Restrictions on critical materials, including reinforcing steel, the shutting off of home building (Conservation Order L-41) and the freezing of lumber all influence the concrete masonry industry. If there is war construction in a manufacturer's locality the products manufacturer can still concentrate on straight war construction of homes and commercial buildings or on certain kinds of special war construction. New uses for the standard concrete unit can be found sometimes. Otherwise he can tap a large volume farm market or go into the manufacture of precast concrete specialties.

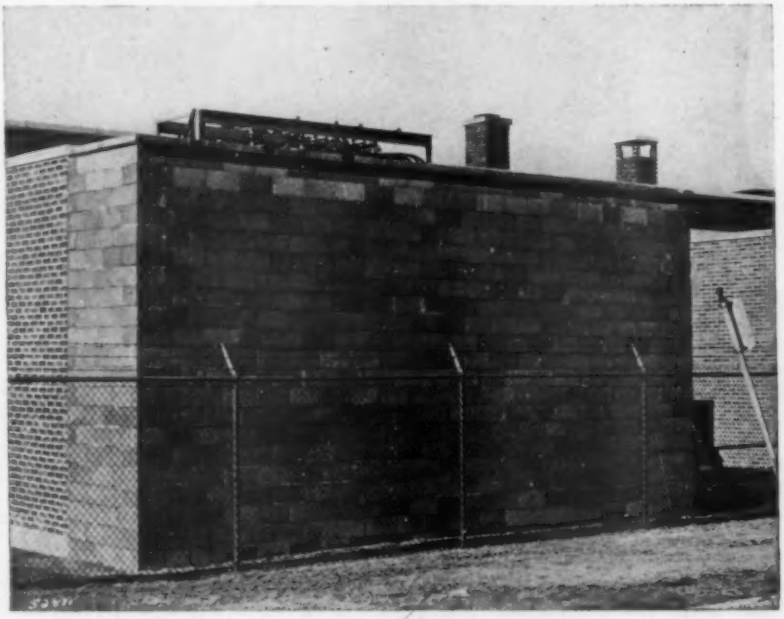
Some of the specialties being developed have attractive possibilities if too many manufacturers in a competitive market don't try to make and sell the same one.

Orders to conserve on critical materials in the present emergency are giving precast concrete an opportunity to demonstrate its versatility. Wherever it can be substituted for steel or can be used to reduce the consumption of any critical material, the products manufacturer is performing a service to his country and to consumers who must have a substitute.

We hear of instances where the concrete products man is frequently asked if he can make a certain commodity. The farmer might ask if a precast concrete milk cooling tank can be made, because he can't get one of steel. A municipality might explore the possibilities of precast concrete manhole covers and frames. Army engineers have initiated ideas where concrete can displace something else.

Some of the requests are for products that might seem too trivial, but it must be remembered that a whole lot of small things can add up to a lot of concrete. A concrete lawn roller, for example, might contain only a cubic foot of concrete. But we know that a small concrete products company has a contract to furnish 20,000 for a big supply firm. He doesn't even have to sell them and he's moving about 1,500 tons of concrete on one order. He saw an opportunity and sold the right company at the start. There are other commodities, such as concrete sash weights, that would come in the same category.

In considering the manufacture of any of the specialties it would be well that concrete products companies investigate their market possibilities *before* investing in molds and other equipment, and that they avail themselves of technical advice of the kind that can be given by the Portland Cement Association. Some of the

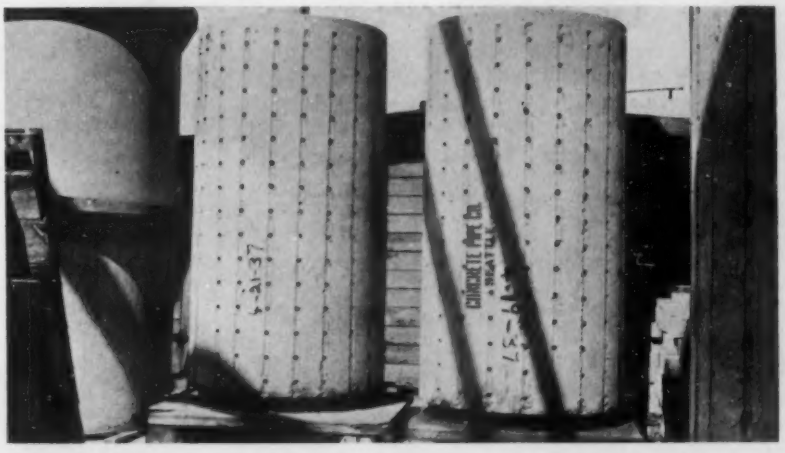


Concrete masonry protective wall around public utilities transformer station in Kansas City, Mo. No mortar is necessary with a wall like this of 12-in. hollow masonry

Special Products of Graystone Concrete Products Co., Seattle, Wash., and Their Uses

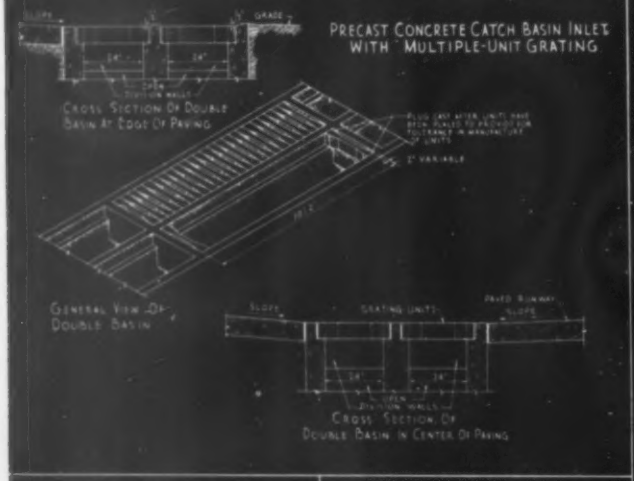
Above: Precast bridge slabs for the Northern Pacific railroad each contain 8½ cu. yd. of concrete. Below: Sectional concrete conduit to protect steam lines, made from half sections of pipe of two kinds

Concrete pedestals for the building of low-cost houses in Seattle, made of bell end pipe filled with concrete to save making forms

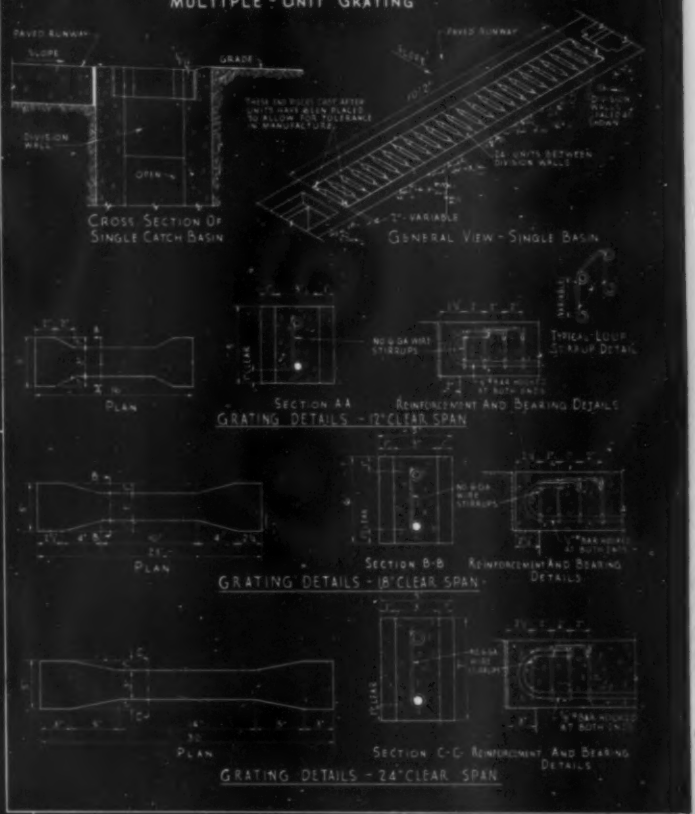


Above: Perforated well curb cylinders, or pipe, 42-in. diameter, for Northern Pacific railroad, used in sandy areas to keep sand out of well pipelines. Below: Concrete valve chamber for Seattle Water Department

Precast Concrete Catch Basin Inlet With Multiple-Unit Grating


Cross Section Of Double Basin At Edge Of Paving
General View Of Double Basin
Cross Section Of Double Basin In Center Of Paving

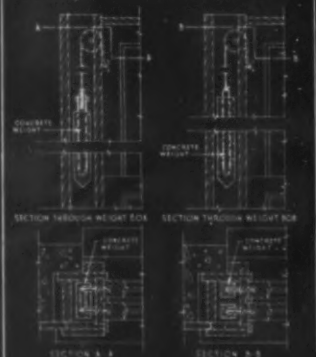
Precast Concrete Catch Basin Inlet With Multiple-Unit Grating



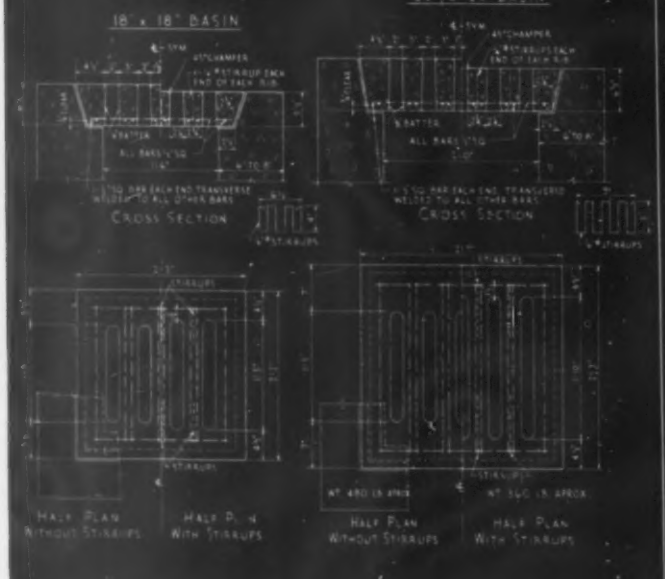
Catch Basin Cover

Precast concrete catch basin covers used in Kowaris at Des Moines Municipal Airport

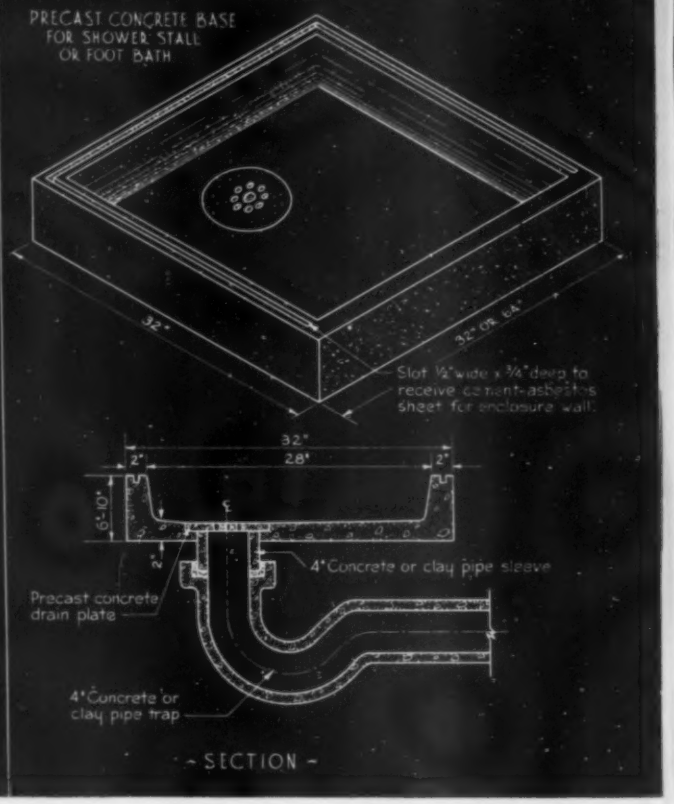
Concrete Sash Weights



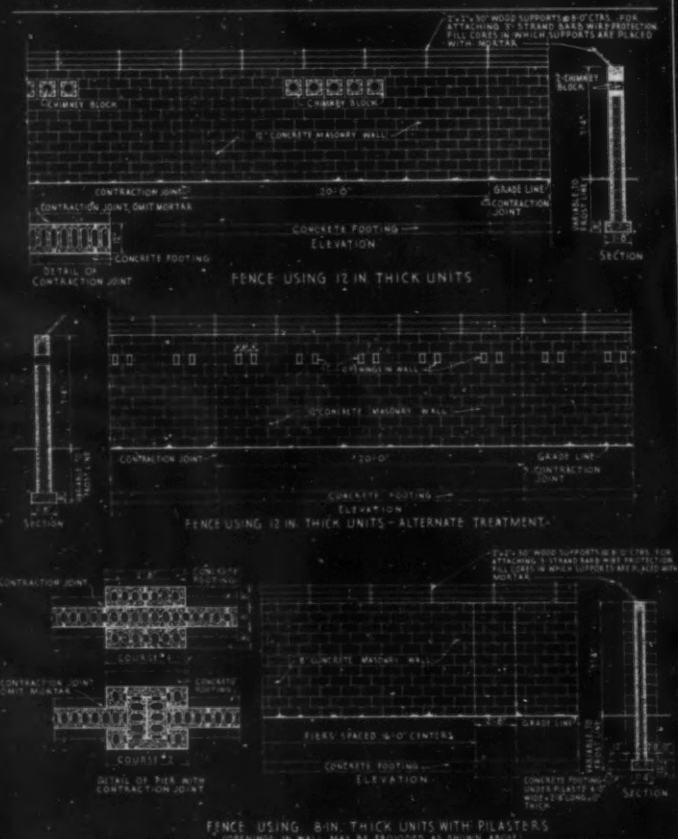
Precast Concrete Catch Basin Covers



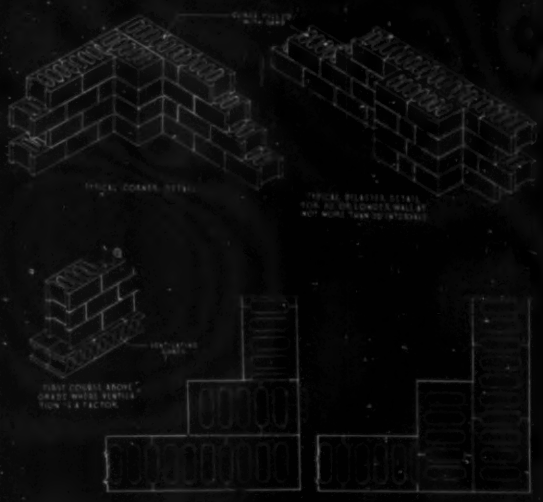
Precast Concrete Base For Shower Stall Or Foot Bath



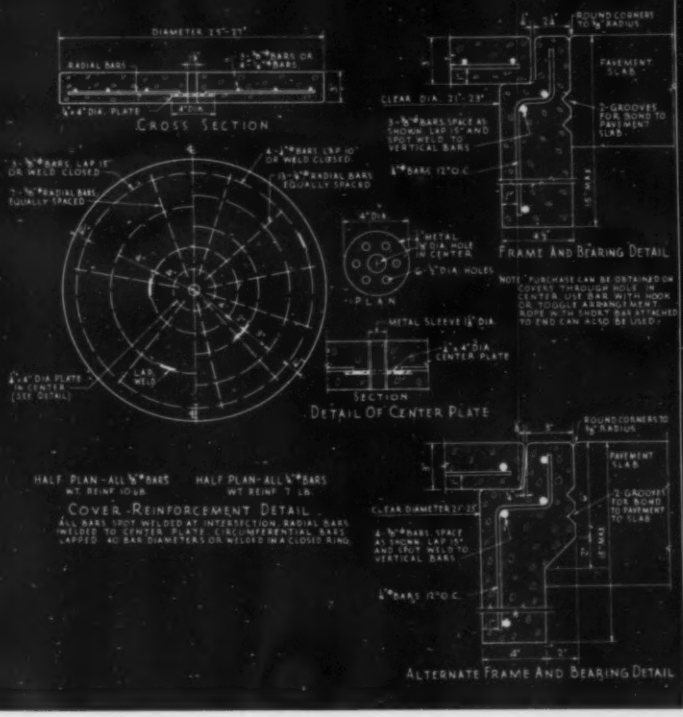
CONCRETE MASONRY FENCES FOR WAR PLANT PROTECTION

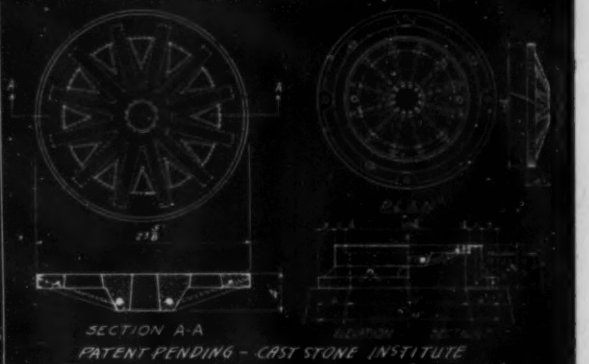


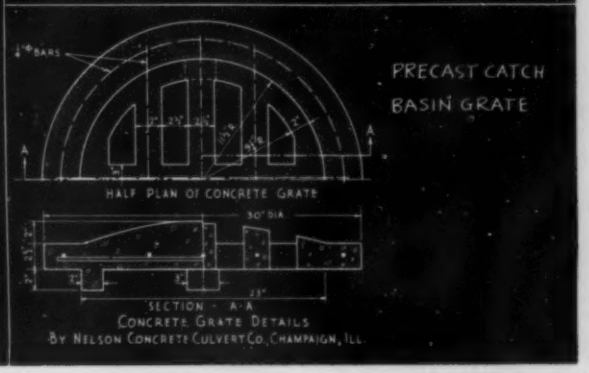
CONCRETE PROTECTION WALL



SEVERAL TYPES OF MANHOLE COVER DESIGNS






PRECAST CATCH BASIN GRATE
HALF PLAN OF CONCRETE GRATE
SECTION - A-A
CONCRETE GRATE DETAILS
BY NELSON CONCRETE CULVERT CO., CHAMPAIGN, ILL.

Just a stunt?

He'll Never Forget!

Machine-Made Concrete Pipe Is Unequalled for Strength, Durability and Economy in Road Drainage

You Don't Build Roads with Elephants!

You Don't Use Hollow Logs for Culverts!

Concrete pipe plants in Washington have hundreds of thousands of dollars invested in special machinery, pay big wages to hundreds of skilled workmen.

Officials responsible for road building plan only by using only modern, machine-made CONCRETE PIPE for drainage, because:

- Proportions and mixing of materials are under exact control in modern plant production.
- Machine tamping gives absolutely uniform texture and density for maximum strength and low absorption, and machine tamping is the only practical method of producing, with economy, pipe of comparable quality.
- Curing with steam or water is generally controlled so are the other processes in plant production, assuring maximum strength.
- All sizes of pipe production in regular factories are in charge of specially trained men of long experience.
- The State of Washington, and Federal agencies, specify machine-made concrete pipe.

CONCRETE PIPE AND PRODUCTS ASSOCIATION
92 Nickerson Street, Seattle
C. M. HOWARD, Engineer
CONCRETE CULVERT, SEWER, DRAINAGE, IRRIGATION PIPE · CRIBBING · GUARD RAIL POSTS · ETC.

CONCRETE Half-Pipe Culvert Licks High Water Table and Shallow Fill

Kittitas County has a tough problem in many miles of road across flat valleys which are saturated with ground water. Culverts sank below water line often till up; culverts extending above road grade are a traffic hazard.

Sam Dunfielton, County Engineer, installed in one day the culvert shown above. This culvert is made of half-sections of 36-inch reinforced concrete culvert pipe. Cut edges are bedded into a 6-inch reinforced slab base, right after pouring. Slab and pipe together combine the functions of a base to prevent settling and an arch bridge for traffic stresses. The top of the grade is scarcely 18 inches over the top of the pipe.

This culvert meets a special need along with a saving in cost, because the usual practice in such conditions is a wide but culvert built in place.

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Concrete Sewer Pipe -- 100 Year Investment!

It took half a century for public officials to realize that, dollar for dollar, Concrete Sewer Pipe outsets all other materials!

The facts came to light when they began to dig up old Concrete Pipe sewers, to examine and test them. Investigations by the American Concrete Pipe Assn. proved that Concrete Sewer Pipe laid many years ago is still in excellent condition, as shown in Galveston, after 38 years of service; Newark, 58 years; Minneapolis, 67 years; Kokomo, 68 years; Savannah, 87 years; St. Paul, 45 years, and so on through a long list of other cities; although many of the above used pipe manufactured by crude hand methods.

CONCRETE SEWER PIPE EXCELS IN:
STRENGTH
RESISTANCE TO ABRASION
LENGTH USEFUL SERVICE
INVESTMENT VALUE

Within the last 25 years manufacturers of concrete sewer pipe have made tremendous strides in improving the quality of their product. The industry has adopted uniform methods under A. S. T. M. specifications. Better materials, better equipment and machine production, have greatly improved quality and lowered cost.

America's first Concrete Pipe sewer is 100 years old this year. How long will modern Concrete Pipe sewers last? Nobody would even guess!

Concrete Pipe Almost Universal in New Sewer Construction

Large civic conductors of storm, sanitary and combined sewage in recent years has shown an overwhelming preference for Concrete Pipe.

Here are some typical installations from records of the American Concrete Pipe Assn.:

Milwaukee, 68 miles.
Houston, Tex., 102 miles.
Detroit, Mich., 169 miles.
Jackson, Miss., over 75 miles.
Roanoke, Va., over 100 miles.
Chicago, Ill., 176 miles in two years.
Arlington Co., Va., 105 miles in 1934.

For officials investing public money in sanitary, storm or combined sewers in Washington can depend upon Concrete Pipe made in Washington by members of this association. Consult any member, or the Engineer, for authentic and detailed information.

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CONCRETE Pipe Speeds Cantonment Project at Strategic Paine Field

sanitary sewers to serve Paine Field's 110 cantonment buildings required over 2½ miles of 8"-10" CONCRETE PIPE. With speed essential, CONCRETE PIPE does its share to enable the contractor to push the job to completion ahead of schedule.

General drainage of runways and taxiways required over 6 miles of CONCRETE PIPE ranging from 6" to 24" in diameter.

The use of CONCRETE PIPE for sewers, culverts, irrigation systems and general drainage gives, with speed of installation, a Greater Strength, a Longer Life, and a Real Economy.

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BESSER VIBRAPACS

Important in the Victory Program

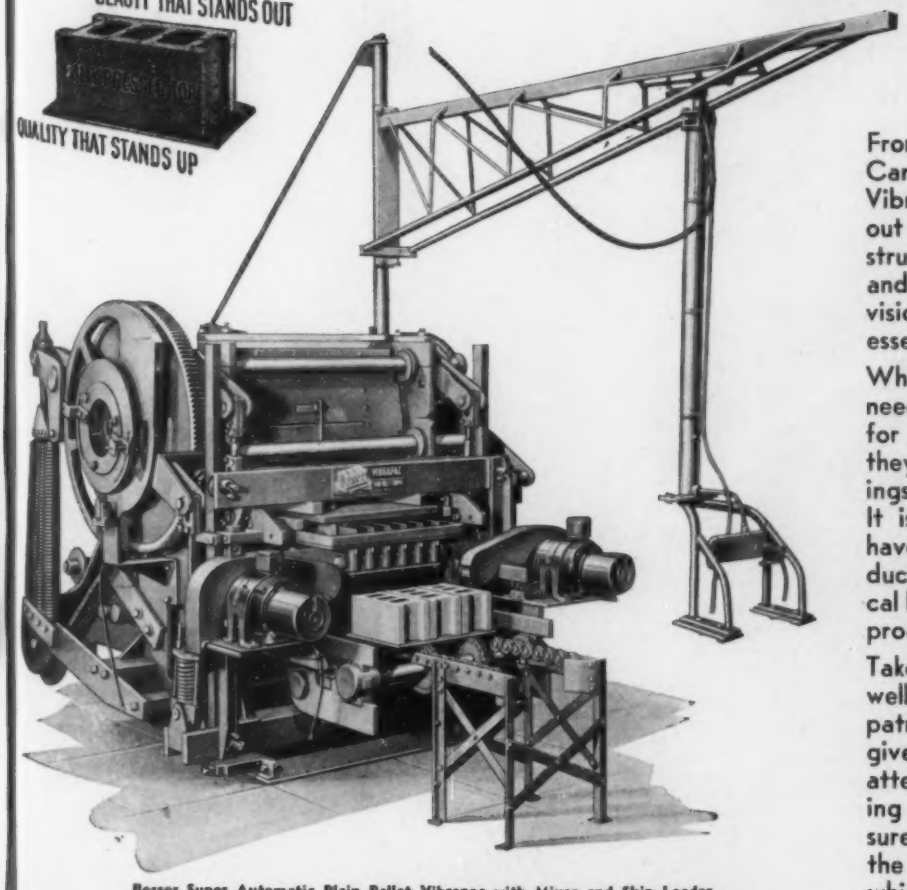
BESSER PLAIN PALLET STRIPPERS

A Besser Plain Pallet Stripper For Every Need

TAMPERS	Besser Super Automatic	8 Hr. Capacity 3120
	Besser Victory Automatic	8 Hr. Capacity 2160
	Besser Semi-Automatic	8 Hr. Capacity 1680
	Besser Champion, Power Operated	8 Hr. Capacity 1000 to 1200
	Besser Multi-Mold, Hand Operated	8 Hr. Capacity 250 to 350
VIBRATORS	Besser Super Automatic Vibrapac	8 Hr. Capacity 4800
	Besser Victory Automatic Vibrapac	8 Hr. Capacity 2160
	Besser Master Vibrapac, Hand Operated	8 Hr. Capacity 800

BEAUTY THAT STANDS OUT

QUALITY THAT STANDS UP



Besser Super Automatic Plain Pallet Vibrapac with Mixer and Skip Loader. Capacity 600 8"x8"x16" per hour made 3 at a time on one plain pallet. Smaller units made in larger multiples on the same pallets.

From Boston to Los Angeles and from Canada to Panama, Besser Plain Pallet Vibrapacs and Tampers are busy turning out concrete blocks for war building construction. The Besser factory is busy day and night making war materials, but provision has been made to take care of essential service on Besser equipment.

Whenever new Vibrapacs have been needed to turn out concrete masonry units for essential war building construction, they were furnished. Under present rulings, they will continue to be furnished. It is gratifying to know that Vibrapacs have been recognized as essential in producing concrete blocks to help make critical building materials go farther in the war program.

Take wartime care of your Vibrapac as well as all other machinery. It is the patriotic duty of all Vibrapac owners to give their machines extra attention in oiling, cleaning and adjusting to insure full production of the extra quality blocks which these machines are so capable of making.

Undirectional vibration under Flam patents (other patents pending) was employed to make the first vibrated blocks ever produced commercially. The Besser Vibrapac combines undirectional vibration with the exclusive Besser Plain Pallet principle. Users of these machines are fully protected under Besser and Flam patents.

BESSER MANUFACTURING CO.

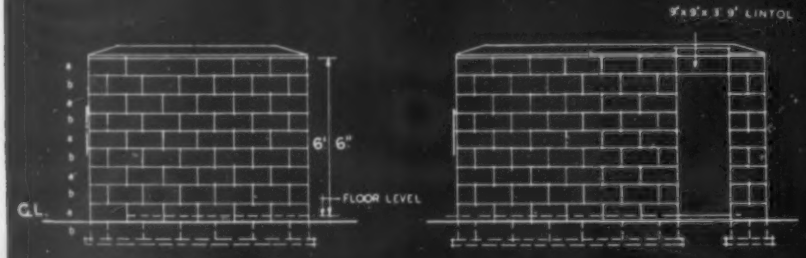
210 Forty-Second St. • Alpena, Mich.

Complete Equipment for Concrete Products Plants

THE SAVING IN PALLET COST WILL PAY FOR A BESSER VIBRAPAC PLAIN PALLET STRIPPER

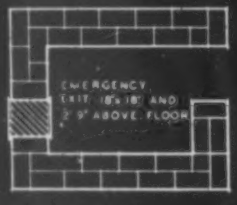
SURFACE TYPE OF SHELTER

THE SHELTER ILLUSTRATED IS CONSTRUCTED OF PRECAST CONCRETE UNITS
THIS LAYOUT IS OF ONE USED IN THE PRESENT THEATRES OF WAR AND IS OF DIFFERENT SIZED UNITS THAN ARE STANDARD IN THE UNITED STATES

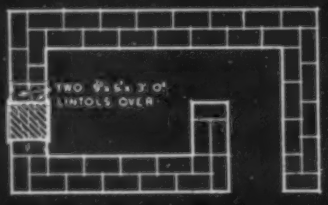


ELEVATION OF TYPE 1

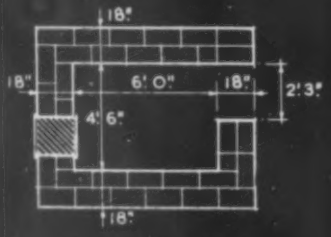
ELEVATION OF TYPE 2



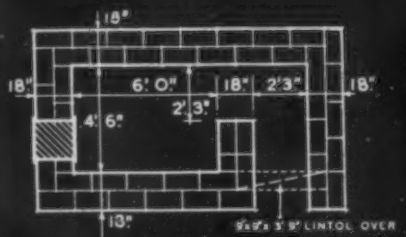
TYPE 1 course a



TYPE 2 course a



TYPE 1 course b

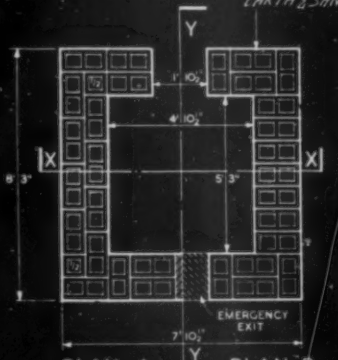


TYPE 2 course b

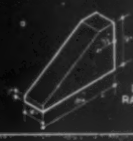
SECTION A A

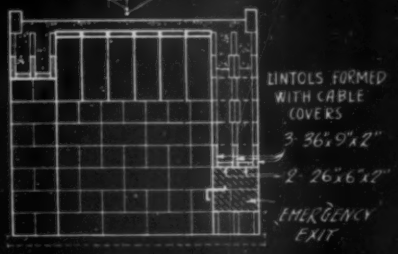
SECTION B B

18"x 9"x 9" DOUBLE CAVITY CONCRETE BLOCKS FILLED WITH EARTH & SAND, ETC

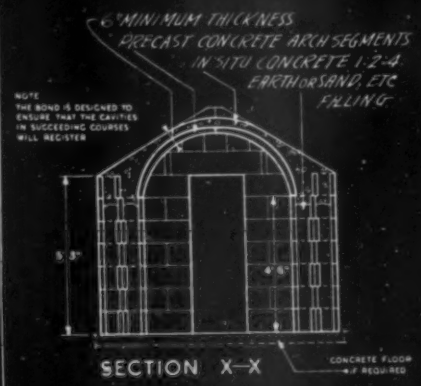


PLAN A PLAN B

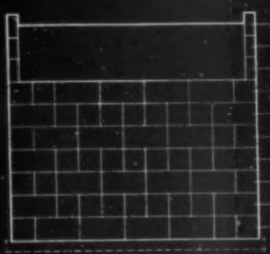




SECTION Y—Y

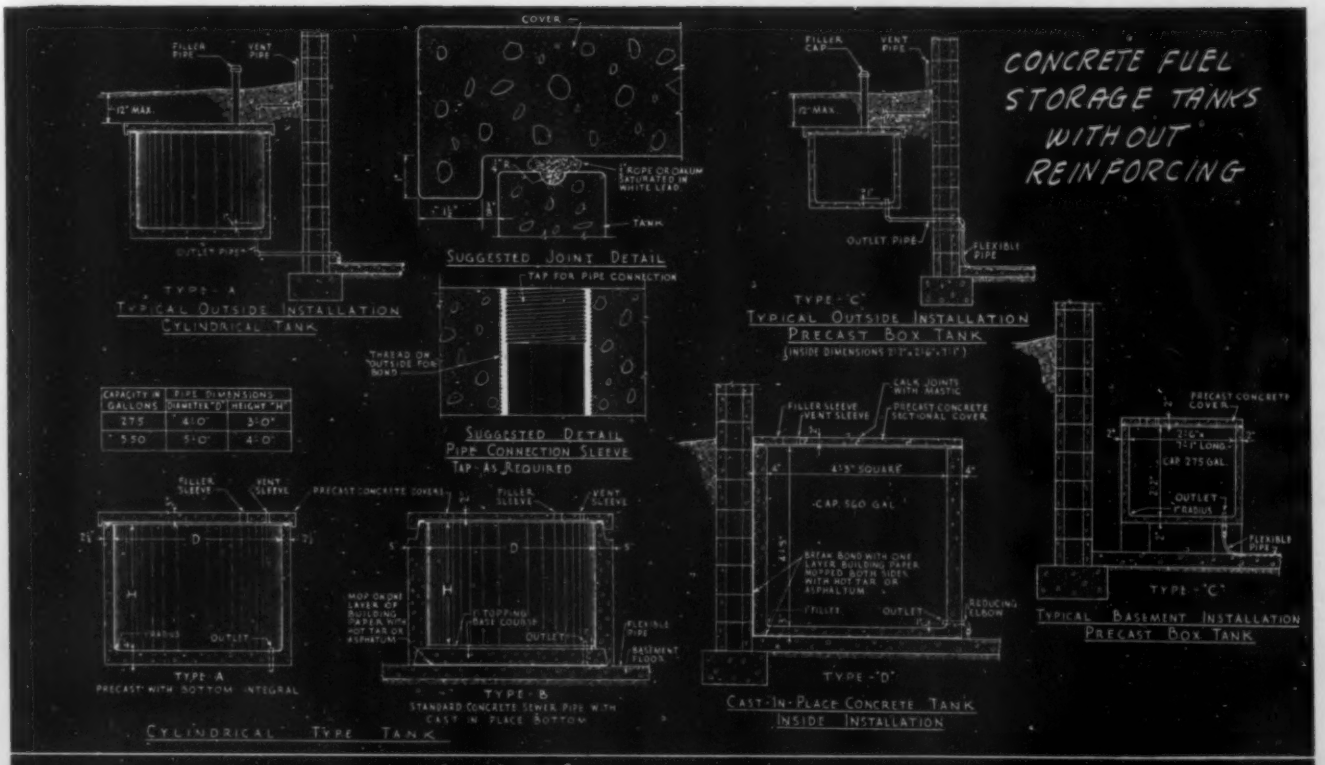

6" MINIMUM THICKNESS PRECAST CONCRETE ARCH SEGMENTS IN SITU CONCRETE 1:2:4
EARTH OR SAND, ETC FILLING
NOTE
THE BOND IS DESIGNED TO ENSURE THAT THE CAVITIES IN SUCCEEDING COURSES WILL REGISTER
5' 3"
4' 6"
CONCRETE FLOOR IF REQUIRED

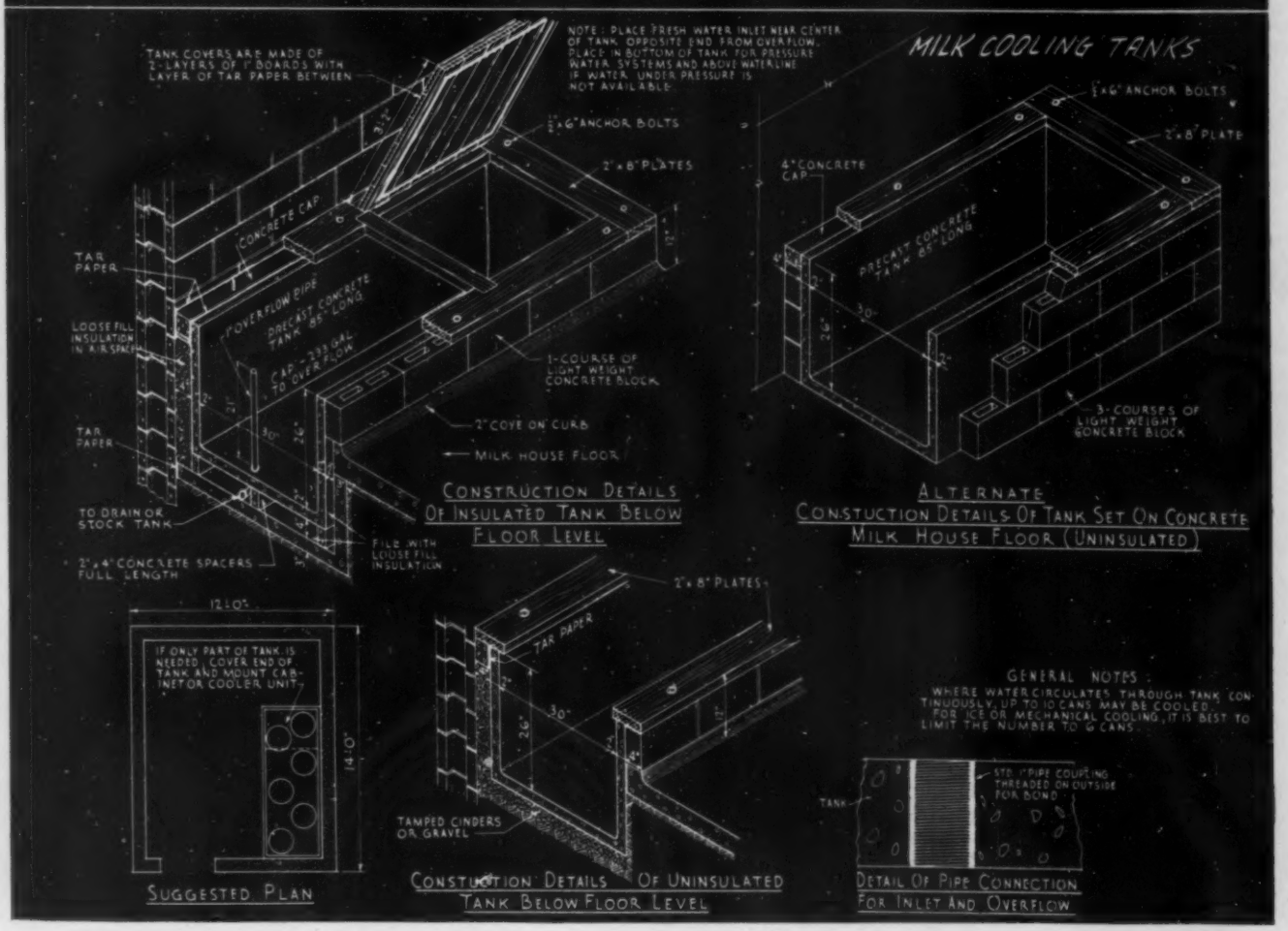
SECTION X—X



SIDE ELEVATION

SHELTER FOR SIX PERSONS FOR ABOVE GROUND CONSTRUCTION (ALSO FOREIGN)


CONCRETE FUEL STORAGE TANKS WITHOUT REINFORCING
FILLER PIPE
VENT PIPE
12" MAX.
OUTLET PIPE
TYPE - A
TYPICAL OUTSIDE INSTALLATION
CYLINDRICAL TANK
COVER
1" ROPE OR OAKUM SATURATED IN WHITE LEAD
TANK
SUGGESTED JOINT DETAIL
TAP FOR PIPE CONNECTION
THREAD OR GROOVE FOR BOND
SUGGESTED DETAIL
PIPE CONNECTION SLEEVE
TAP AS REQUIRED
CAPACITY IN GALLONS
PIPE DIMENSIONS DIAMETER "D" HEIGHT "H"
275 4'-0" 3'-0"
550 5'-0" 4'-0"
FILLER SLEEVE
VENT SLEEVE
PRECAST CONCRETE COVERS
OUTLET
TYPE - A
PRECAST WITH BOTTOM INTEGRAL
MOP ON ONE LAYER OF BUILDING PAPER WITH HOT TAR OR ASPHALTUM
6" TOPPING
BASE COURSE
FLEXIBLE PIPE
BASEMENT FLOOR
TYPE - B
STANDARD CONCRETE SEWER PIPE WITH CAST IN PLACE BOTTOM
CYLINDRICAL TYPE TANK
FILLER CAP
VENT PIPE
12" MAX.
OUTLET PIPE
FLEXIBLE PIPE
TYPE - 'C'
TYPICAL OUTSIDE INSTALLATION
PRECAST BOX TANK
(INSIDE DIMENSIONS 3'1"x 2'6"x 3'1")
CALK JOINTS WITH MASTIC
FILLER SLEEVE
VENT SLEEVE
PRECAST CONCRETE SECTIONAL COVER
43" SQUARE
CAP. 550 GAL.
BREAK BOND WITH ONE LAYER BUILDING PAPER MOPPED BOTH SIDES WITH HOT TAR OR ASPHALTUM
FILLER
OUTLET
REDUCING ELBOW
TYPE - "D"
CAST-IN-PLACE CONCRETE TANK
INSIDE INSTALLATION
PRECAST CONCRETE COVER
2'-6" x 7'-1" LONG
CAP. 275 GAL.
OUTLET 1" RADIUS
FLEXIBLE PIPE
TYPE - "C"
TYPICAL BASEMENT INSTALLATION
PRECAST BOX TANK

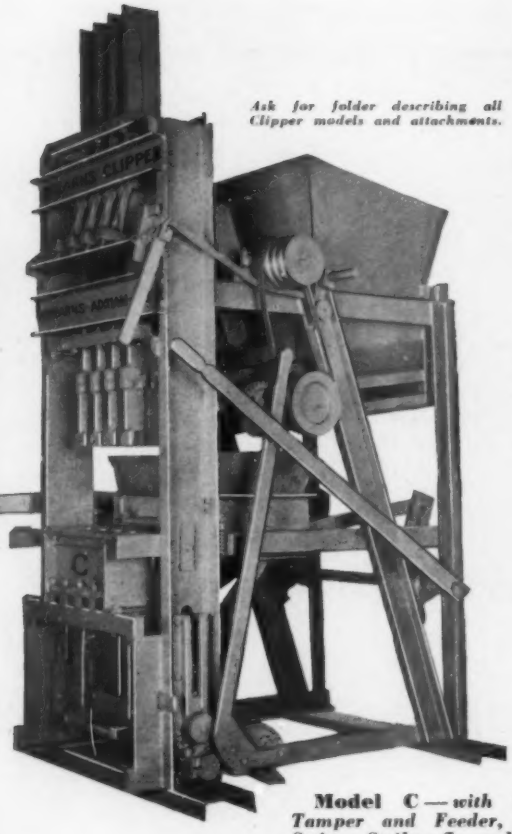

MILK COOLING TANKS
TANK COVERS ARE MADE OF 3 - LAYERS OF 1" BOARDS WITH LAYER OF TAR PAPER BETWEEN
NOTE: PLACE FRESH WATER INLET NEAR CENTER OF TANK, OPPOSITE END FROM OVERFLOW. PLACE IN BOTTOM OF TANK FOR PRESSURE WATER SYSTEMS AND ABOVE WATERLINE IF WATER UNDER PRESSURE IS NOT AVAILABLE
1/2"x6" ANCHOR BOLTS
2"x8" PLATES
CONCRETE CAP
TAR PAPER
LOOSE FILL INSULATION IN AIR SPACE
OVERFLOW PIPE
PRECAST CONCRETE TANK 85" LONG
CAP. = 233 GAL. TO OVERFLOW
1-COURSE OF LIGHT WEIGHT CONCRETE BLOCK
2" COVE ON CURB
MILK HOUSE FLOOR
TO DRAIN OR STOCK TANK
FILL WITH LOOSE FILL INSULATION
2"x4" CONCRETE SPACERS FULL LENGTH
CONSTRUCTION DETAILS OF INSULATED TANK BELOW FLOOR LEVEL
1/2"x6" ANCHOR BOLTS
2"x8" PLATE
4" CONCRETE CAP
PRECAST CONCRETE TANK 85" LONG
3 - COURSES OF LIGHT WEIGHT CONCRETE BLOCK
ALTERNATE
CONSTUCTION DETAILS OF TANK SET ON CONCRETE MILK HOUSE FLOOR (UNINSULATED)
12'-10"
IF ONLY PART OF TANK IS NEEDED, COVER END OF TANK AND MOUNT CABINET OR COOLER UNIT.
14'-10"
SUGGESTED PLAN
2"x8" PLATES
TAR PAPER
TAMPED CINDERS OR GRAVEL
CONSTUCTION DETAILS OF UNINSULATED TANK BELOW FLOOR LEVEL
GENERAL NOTES:
WHERE WATER CIRCULATES THROUGH TANK CONTINUOUSLY, UP TO 10 CANS MAY BE COOLED. FOR ICE OR MECHANICAL COOLING, IT IS BEST TO LIMIT THE NUMBER TO 6 CANS.
TANK
STD. 1" PIPE COUPLING THREADED ON OUTSIDE FOR BOND
DETAIL OF PIPE CONNECTION FOR INLET AND OVERFLOW

STEARNS CLIPPER STRIPPER

has 3 IMPORTANT FEATURES

—here they are

Ask for folder describing all Clipper models and attachments.



Model C — *with Power Tamper and Feeder, Hand Strip, Strike-off and Off-Bearer.*

High Quality of Block

Stearns alternate-drop 8-bar tamping action insures uniform, dense block. Feeding and tamping adjustable to aggregate and product.

High Production Per Man

Clipper Stripper produces more blocks per man per day than any other machine with comparable power operation.

Low Initial Investment

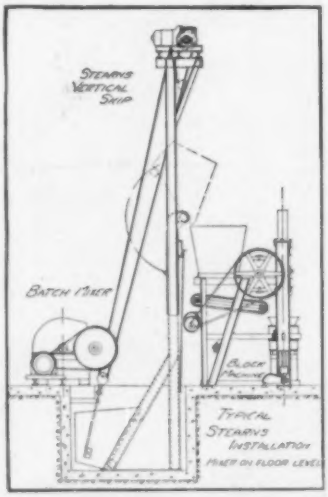
Start with Model E and progressively add power attachments, until you have "All Power", never sacrificing equipment previously purchased.

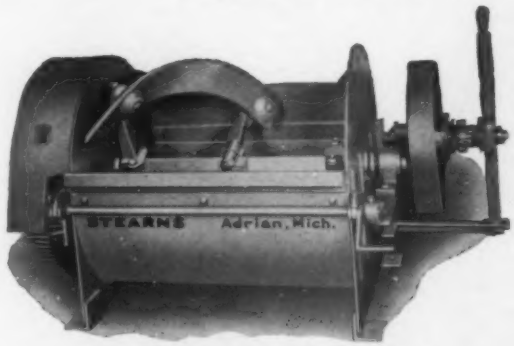
Attachments for Clipper Strippers

Simple attachment available for making eight brick at a time. Also attachments for making rock and panel face blocks by the "strip-up" method and the "down-face" method. Rigid mold box insures blocks true to shape and size.

Skip Loader

(Left) For hoisting mixed or dry material. Installed with any make of mixer. Ask for Skip Loader Folder.





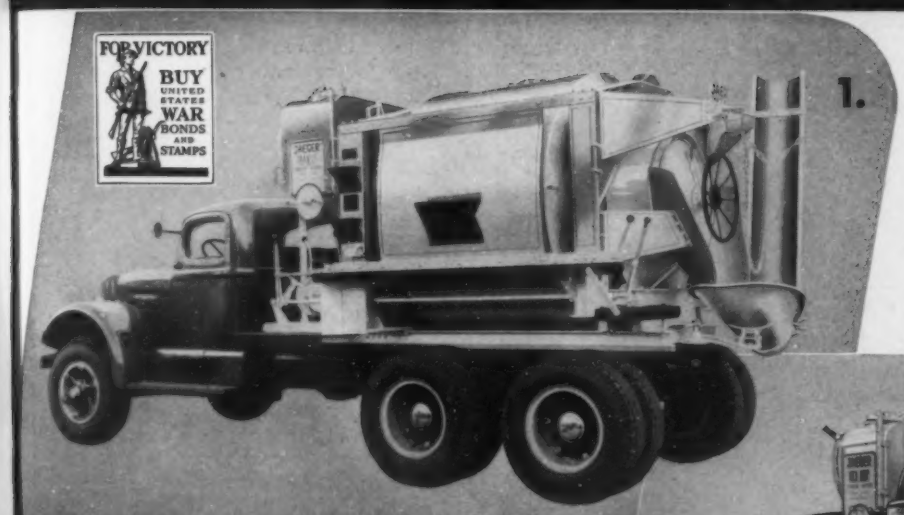
STEARNS Mixers

With readily interchangeable and replaceable bar type liners of wear resisting "Sterloy" metal. Pulley, V-belt or gear-head motor drive. Skid or truck mounting. Sizes: 3, 12, 18, 28, 42 and 50 cu. ft. Ample inventory assures prompt shipment.

WAR **Although the Stearns plant is operating 24 hrs. a day on war work, we are able to supply, from stock, vibration and tamp machines, skip loaders and mixers for necessary construction work. Also manhole block machines and No. 9 Jolteretes that will make any unit that can be accommodated in a mold box 24 in. long, 18 in. wide and 12 in. high.**

STEARNS MANUFACTURING CO. ADRIAN, MICH.

Only JAEGER Equips You to Meet EVERY Ready-Mix Demand

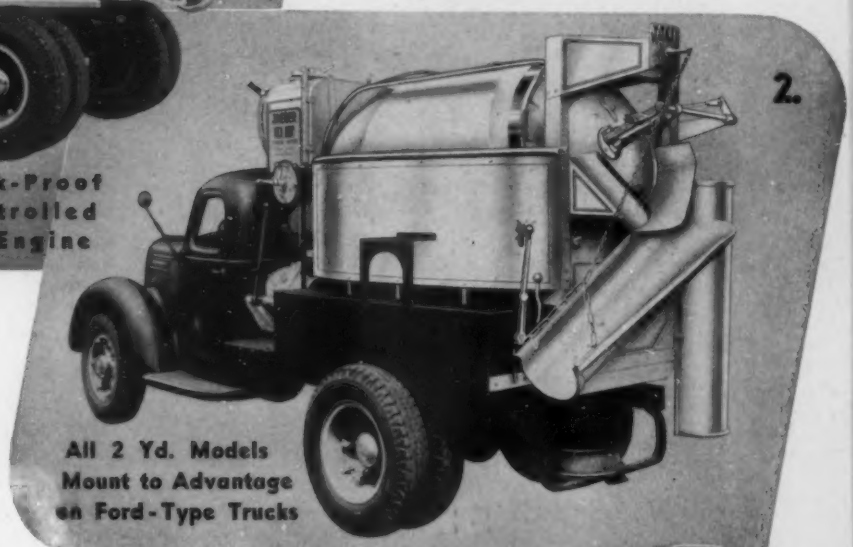


1.

All Jaegers Have 2-Speed Shock-Proof Transmission—Vacuum Cab Controlled Truck Engine Drive or Separate Engine

Standard LOW CHARGE

Type: Lowest, most economical to load; fastest on the market to mix and discharge — produce maximum daily yardage of proven higher strength concrete. Sealed drum meets any specification. Sizes 2 to 8 cu. yds.



2.

All 2 Yd. Models Mount to Advantage on Ford-Type Trucks

HIGH DUMP Types:

(2) Top Loading Models with "Sealed Drum"

(3) Or Combination Top and End Loaders (Pat'd)

Far outselling all other high discharge truck mixers today because they are fastest to load, mix and discharge any slump concrete — and are the only high discharge truck mixers that meet every specification and job condition.

"Sealed Drum" Models take full load in one quick drop through the top. Fast Vacuum-Controlled Discharge Door seals against loss of moisture and heat in winter concrete.

Jaeger End Loading Hopper Attachment (specially adapted to older or temporary plants not equipped for ribbon loading) offers many advantages over all other end loaders — and does not interfere with use of Top Loading Door where specified by engineers. (See details at right.)

Both types are built in 2, 3, 4 and 5 yd. sizes.

3.

Jaeger Charging-Discharging Hopper Attachment Permits Top or End Loading in Order to Meet Conditions - - -

The only end-loader which does not constrict drum opening and slow up charging and discharge. One quick turn of hand wheel opens Discharge Gate — no need to move entire Hopper (requiring many turns of a wheel) — no second seal to leak or wear.

JAEGER PORTABLE HOPPER

Saves Truck Mixers Waiting—Means 25% More Payloads per Day on Average Job. Tows to job behind truck mixer — takes full 2 or 3 yd. batches. One hopper serves almost any job.

THIS HANDY BLANK BRINGS YOU FULL INFORMATION

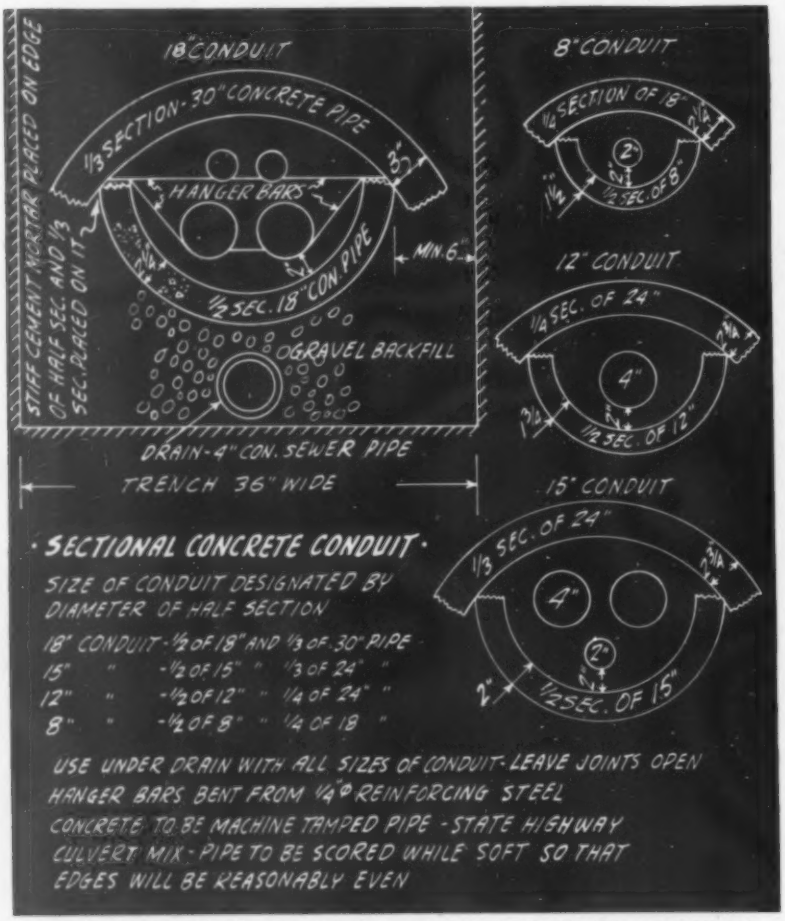
Complete Data, Models, Specifications, Prices, Terms

THE JAEGER MACHINE COMPANY
603 Dublin Avenue, Columbus, Ohio

Send us newest information on ☐ Standard LOW CHARGE Truck Mixers, Agitators, ☐ HIGH DUMP Models, ☐ Portable Hoppers, ☐ Auto-Pavers and Spreaders, ☐ Pumps, ☐ Mixers, ☐ Hoists, ☐ Carts.

Name_____

Address_____


18" CONDUIT
1/3 SECTION-30" CONCRETE PIPE
HANGER BARS
MIN. 6"
1/2 SEC. 18" CON. PIPE
GRAVEL BACKFILL
STIFF CEMENT MORTAR PLACED ON EDGE OF HALF SEC. AND 1/3 SEC. PLACED ON IT
DRAIN-4" CON. SEWER PIPE
TRENCH 36" WIDE
8" CONDUIT
1/4 SECTION OF 18"
1/2 SEC. OF 8"
12" CONDUIT
1/4 SEC. OF 24"
1/2 SEC. OF 12"
15" CONDUIT
1/3 SEC. OF 24"
1/2 SEC. OF 15"
SECTIONAL CONCRETE CONDUIT
SIZE OF CONDUIT DESIGNATED BY DIAMETER OF HALF SECTION
18" CONDUIT - 1/2 OF 18" AND 1/3 OF 30" PIPE
15" " - 1/2 OF 15" " 1/3 OF 24" "
12" " - 1/2 OF 12" " 1/4 OF 24" "
8" " - 1/2 OF 8" " 1/4 OF 18" "
USE UNDER DRAIN WITH ALL SIZES OF CONDUIT - LEAVE JOINTS OPEN
HANGER BARS BENT FROM 1/4" ø REINFORCING STEEL
CONCRETE TO BE MACHINE TAMPED PIPE - STATE HIGHWAY CULVERT MIX - PIPE TO BE SCORED WHILE SOFT SO THAT EDGES WILL BE REASONABLY EVEN

Design details for sectional concrete conduit as used on the Pacific Coast to protect steam pipe lines to barracks, etc. Made of half sections of pipe, the bottom is tongue-and-groove, the cover of bell-and-spigot pipe

kinds of products which are needed require considerable ingenuity in their manufacture.

High Strength Concrete Needed

A particular product, such as manhole covers and frames might require concrete with compressive strengths up to 7500 p. s. i. at 28 days, for example, in order to withstand heavy traffic. It must be remembered that conservation of critical materials is uppermost. It takes superior concrete to enable a manhole cover and frame for a 24-in. manhole weighing about 300 lbs. to replace around 500 lb. of cast iron in that kind of service with about 32 lb. of reinforcing. In a few instances plants are making such an assembly capable of carrying a total load of 25,000 lb.

Many plant operators are not accustomed to making that kind of concrete. Neither have they had experience in casting a dry mix concrete into molds where every corner and recess must be filled properly. It is desirable to strip many kinds of units the day after a pour in preference to having more molds made. That's one good reason for a dry mix, and placing by vitration. We know of some commodities that are stripped immediately after a pour. A no slump concrete is necessary then.

A lot has to be learned to do the job right, but it is surprising what has already been accomplished.

In order to preserve certain markets concrete can be re-designed to require much less reinforcing steel or none at all.

Unreinforced Burial Vaults

Manufacturers of concrete burial vaults have come face to face with the necessity of manufacturing vaults with little or no reinforcing steel, since Limitation Order No. L-64 was issued by W.P.B. Tests have been made which show that concrete vaults can be made to quality requirements without any reinforcing steel.

If the covers can withstand all the handling in the process of their manufacture without cracking, they can be made to have an ample factor of safety for normal earth loads. Sidewalls should have a minimum thickness of 1½ in. and the top of the air seal vault and the bottom of the top seal vault should be at least 2 in. thick. It is recommended that the concrete have a compressive strength of at least 5000 p. s. i. at 28 days.

Certain other recommendations are necessary in manufacturing unreinforced concrete vaults, which would apply, with modification, to other products which now must be made of unreinforced concrete and to specials which have to withstand heavy loads. A plastic workable mix with a maximum slump of 6 in. is needed, in making concrete vaults without reinforcing steel. Vibration or efficient hand spading during placing of the concrete should be used.

Vaults should remain in the molds at least 24 hr. at temperatures above 70 deg. F and should be moist-cured at least seven days at temperatures above 70 deg. F. The aggregates should include at least 20 per cent pea gravel or well-graded crushed stone retained on the No. 8 sieve and passing ⅜ in.

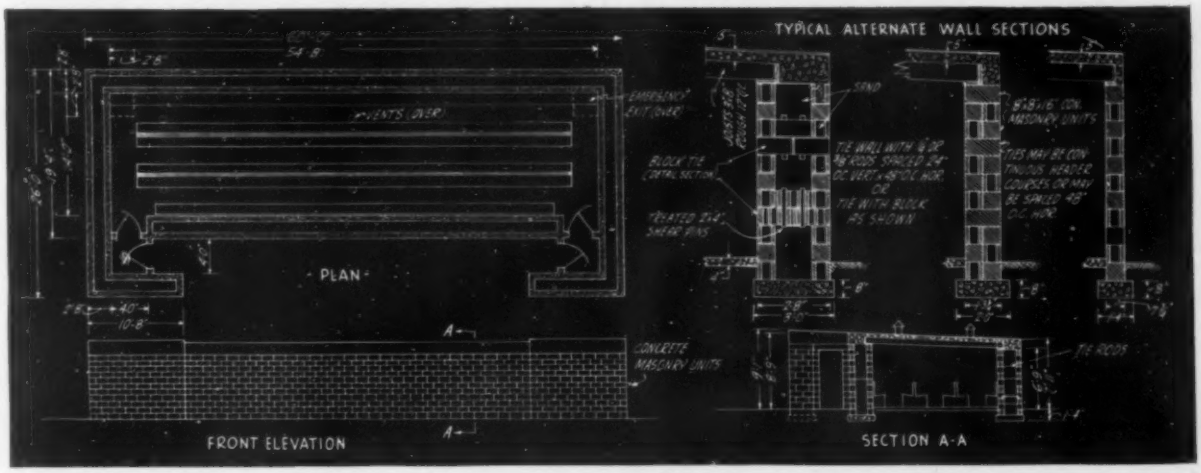
It looks as if many manufacturers of concrete products will have to brush up on the fundamentals of concrete design and avail themselves of authoritative information, if they go into specialty products and want to keep making certain others without reinforcing. After the war is over, some of the new uses for concrete will stick and the industry will certainly profit by the experience.

Concrete Water Tanks

A DEMONSTRATION on how to build concrete water tanks to substitute for steel tanks was held recently on the Orval Bales' farm near Tina, Mo. Marion Clark of the Missouri College of Agriculture and C. R. Meeker of the Portland Cement Association assisted with the demonstration.

Double Shifts

QUARTZITE STONE CO., Lincoln, Kan., is operating both its crushing and concrete pipe plants two shifts a day. The quarry and crushing plant 8-hour shifts, the pipe plant 10-hour shifts. Military projects in central Kansas are the reasons.



Suggested design for an air raid shelter of concrete masonry to accommodate 200 persons, drawn up by Graystone Concrete Products Co., Seattle, Wash. Material requirements are for over 3000 8 x 8 x 16-in. concrete units, 91 cu. yd. of sand and 12.6 cu. yd. of concrete

Merchandising

SPECIAL concrete products to conserve critical materials or to replace metal products entirely must be merchandised. Many manufacturers of concrete products are being approached to see if this or that commodity, no longer available, can be made of concrete, and, they have been getting some business as a result. But sales originating in that way are a small percentage of what can be done. It's up to the company that wants new business to initiate some new ideas and to put them across.

Manhole covers and frames, shower bases, precast mullions, catch basin gratings and any other new specialties must be merchandised in some way or other even though the product originated with the company, from an outside request.

There will be few new highways built for the duration, so the manufacturer of manhole covers and frames will have to hustle to get enough business to make the enterprise worth his while. He's got to get as much as he can out of a market that is limited. One of the important outlets is government projects. Any airport or other project that needs sewerage and drainage is a prospect for precast manhole covers and frames and possibly for precast catch basin grating. To win these kinds of orders, the products man must work closely with the Army and Navy engineers. Test data are one of the best tools in these contacts, to substantiate the claim that the products will stand up under service.

The other prospect for sale is to municipalities, for replacement and maintenance purposes. Designs of units such as manhole covers and frames should be standard so that, in replacing cast iron, the manhole itself need not be altered. Cost as well as conservation of critical materials enters into the picture. Promotional literature containing all the facts is being put out by progressive manufacturers.

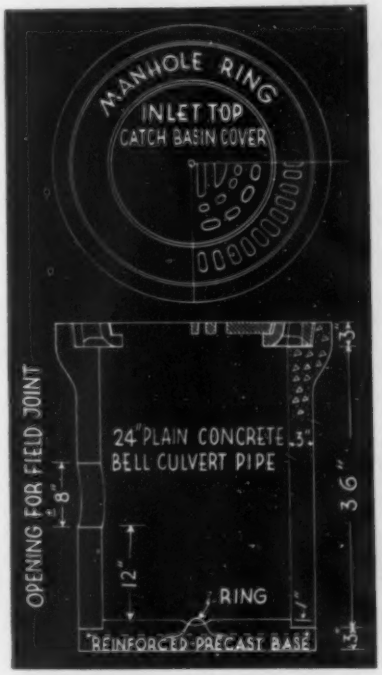
Contract Manufacturing

Shutting off of plumbing fixtures, including bathtubs, and their exclusion in the specifications for defense houses, has started the manufacture of precast concrete shower bases. These, too, can be sold direct to defense projects but there are other possibilities. Some have shifted the responsibility of sales to large plumbing supply firms and manufacture exclusively for them on contract. Shower bases can be sold for installation in basements of homes or, possibly, for replacement purposes. One concern is manufacturing shower bases to the exact dimensions of a standard bathtub. They can then be installed in place of a bathtub and later replaced.

Some of the wide-awake concrete products manufacturers are going to large firms, such as mail order houses, etc., to get a line on products that might be made of concrete. Some of these big firms have had products that they regularly carried cut off because they are made of critical materials. We mention again the small concrete products plant that is turning out 20,000 lawn rollers for a big concern that formerly sold steel rollers. It pays to shop around to see what is needed, remembering that several lines of new products can create a profitable volume of sales to take the place of a declining construction business.

Advertising and sales promotion will play an important part, and advertisements of the type shown ac-

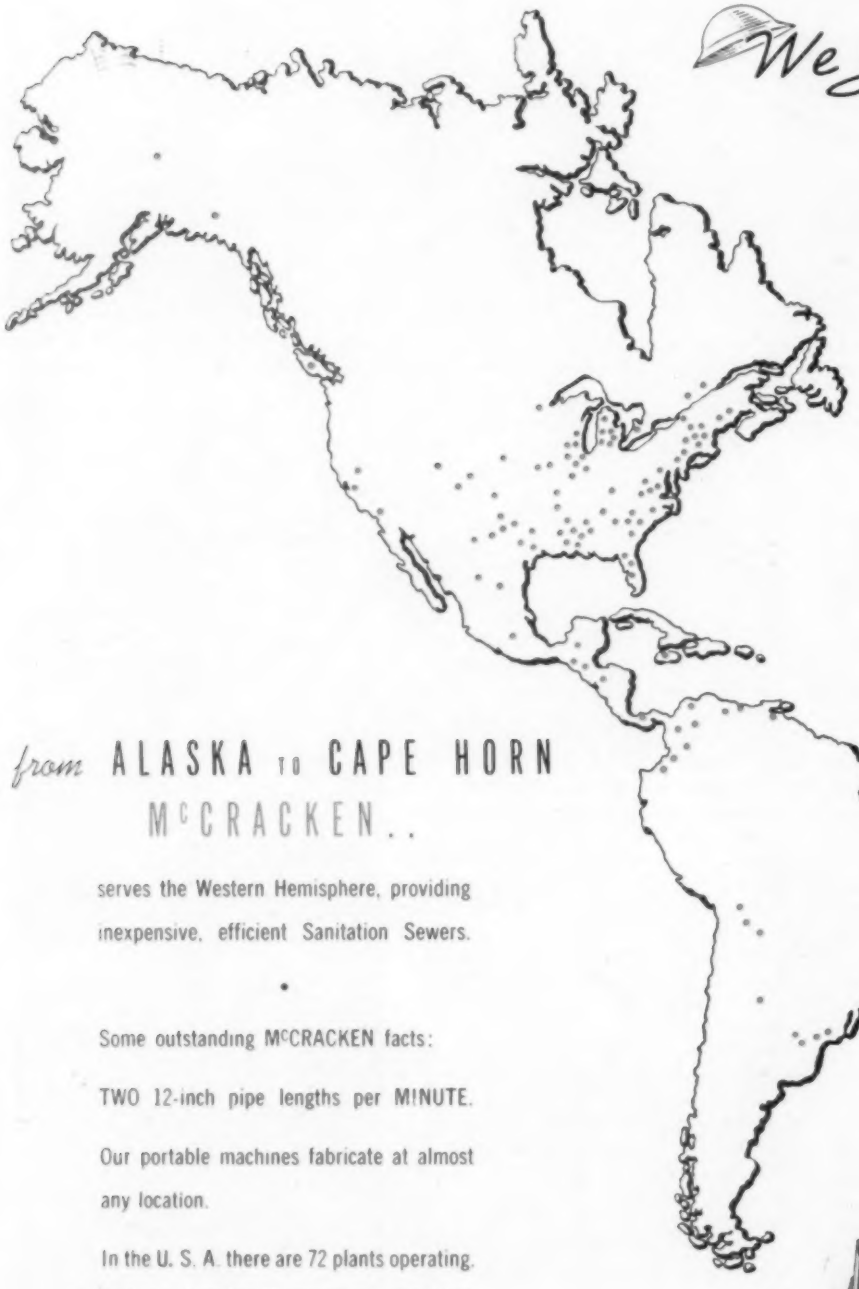
(Continued on page 98)



A type of precast catch basin used widely in the Pacific Northwest to receive run-off water from airport flight pavements

INTER-AMERICAN SOLIDARITY

of McCRACKEN concrete sewer pipe installations



We Serve

From coast to coast where defense projects call for maximum speed and supremacy of quality it's . . .

McCRACKEN

•

WE STAND READY FOR YOUR DEFENSE CONSTRUCTION CALL

from ALASKA to CAPE HORN

McCRACKEN . .

serves the Western Hemisphere, providing inexpensive, efficient Sanitation Sewers.

•

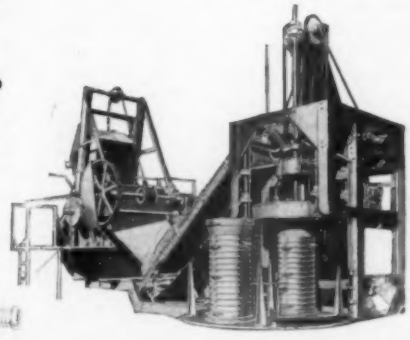
Some outstanding McCRACKEN facts:

TWO 12-inch pipe lengths per MINUTE.

Our portable machines fabricate at almost any location.

In the U. S. A. there are 72 plants operating.

In Latin America 27 plants are operating.



CONCRETE PIPE MACHINERY CO · SIOUX CITY · IOWA · U·S·A

Manufacturing Concrete Specialties

A VARIETY of special precast concrete products are beginning to make their appearance. Among them are the precast concrete manhole covers mentioned earlier and rings, catch basin gratings of several types, shower bases, mullions and milk cooling tanks. Design details for some of the new products are shown herewith as blueprints.

Manhole covers and frames, and shower bases are the new products now most commonly manufactured. Both are made on vibrating tables with a concrete designed to have a compressive strength of at least 5000 p. s. i. at 28 days. A low slump concrete is desired.

There still are available cast iron manhole covers and frames in some parts of the country, but even in those locations precast concrete is preferred. Several hundred pounds of cast iron are saved by a single concrete unit. Government engineers do not necessarily have the same specifications for different locations, which is one complication that must be worked out before having molds made up.

In at least one instance, the manufacturer, who also produces cast stone, makes his own molds of concrete for the cover and ring. The advantage is that he can hold the units in the molds for a longer period of time and is better able to produce a large number in a short period of time. The usual practice is to have one steel mold made up and to apply a stainless paraffin base form oil before placing the concrete. The average plant will turn out possibly 25 units a day and strip them the next morning. Concrete is placed on the ordinary vibrating table and the units are cured by live steam.

There have been some designs developed for service where no heavy loads are encountered, but some units are designed to withstand the heaviest wheel-loads. Covers and frames are being manufactured with load-carrying capacities easily exceeding the A. A. S. H. O. requirement of 16,000 lb. plus 25 per cent for impact. For this service compressive strengths as high as 10,000 p. s. i. are being obtained. They must be accurate of dimension, without chipped edges and free from pitting. Very little reinforcing is needed. Articles following, in this issue, discuss manufacturing methods of certain companies that are actively engaged in developing new concrete products.

Shower bases are manufactured in much the same way, except that no reinforcing steel is needed. Concrete testing as high as 7500 p.s.i. at 28 days is going into some of them. Most of them are only about 2 in. thick. Some of them are polished down to a highly finished appearance, particularly where they substitute for bathtubs in homes.

Milk cooling tanks are being made using standard burial vault molds with very slight change. These tanks can be made without reinforcing just as vaults can, by observing certain rules governing wall thicknesses and by using a 5000 lb. concrete that is placed by vibration.

Catch basin grates of two different types are being made. One made by the Nelson Concrete Culvert Co., Champaign, Ill., is a complete grate made to the diameter of the catch basin, that requires only 2½ lb. of reinforcing steel, in ¼-in. rods. These are restricted to use in areas where they will not be subjected to vehicular traffic, such as off-the-road and field drainage. This grate has the approval of the Illinois Division of Highways and has been adopted by several Illinois counties. Price is about $7.50 for a grate that replaces a $13 cast iron grate.

Precast concrete multiple unit grating is finding favor, to replace cast iron grating for use in intercepting storm water adjacent to airplane runways. They cost about one-half as much as cast iron and save about 90 per cent of the metal. Design details are shown in the accompanying illustrations. Precast mullions have their place in new industrial buildings where glass block are to be held in place.

Other products have been suggested as feasible to make in concrete. Precast concrete tractor weights to be applied to drive wheels on tractors to reduce slippage would have possibilities. Cast iron is ordinarily used. Units such as these should be made with ¾-in. top size gravel, a 1:2¼:3 mix and with a maximum of 6 gal. of water to a sack of cement, according to concrete engineers.

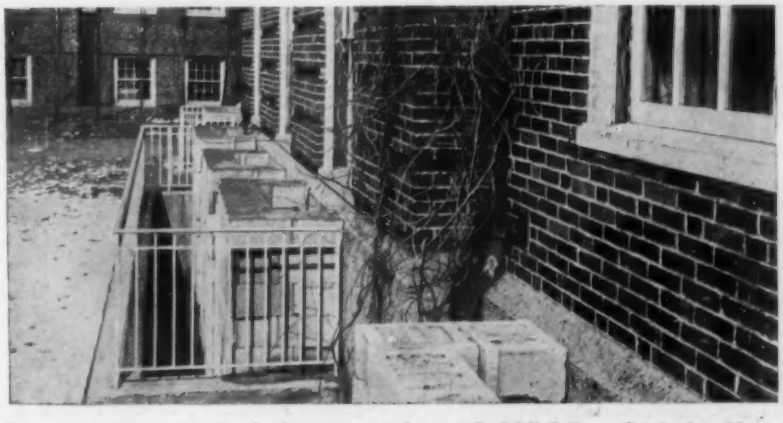
Concrete sash weights are also suggested. Each window requires two or four sash weights to counterbalance the sash or sashes weighing 12 to 34 lb. A mix of 1:4 or 1:5 by volume would be best. Heavy aggregates such as copper slag, or iron ore, might be used.

Concrete Products Shipped Into Seven States

RAILROAD CONCRETE PRODUCTS CO., Denison, Texas, is working on a 16-hr. daily shift according to a recent announcement of J. H. Weis, superintendent. Concrete products are being supplied for the Frisco relocation in the Denison Dam area and for relocation of highway 70. The company is shipping into seven states and employs 28 men at Denison.

Cement Shortages

REPORTS from Texas, Kansas and from central Washington (state) say portland cement is locally classed as a critical material and orders can be filled only on priority ratings.



Concrete masonry protection for basement windows at Radcliff College, Cambridge, Mass.

Precast Concrete Shower Bases

Badger Concrete Co., Oshkosh, Wis., also making concrete manhole fittings and milk cooling tanks

Stockpile of shower bases made to exact floor dimensions of standard bathtubs. Drains are installed at the plant

THREE NEW products of precast concrete are being manufactured by the Badger Concrete Co., Oshkosh, Wis., as a result of the war program and its restrictions on the use of critical materials. Precast concrete shower bases are being made, for installation in housing projects where the regular bathtub and fixtures are not provided for in the plans and as a substitute for the standard plumbing fixtures and bathtubs which are no longer available to homes.

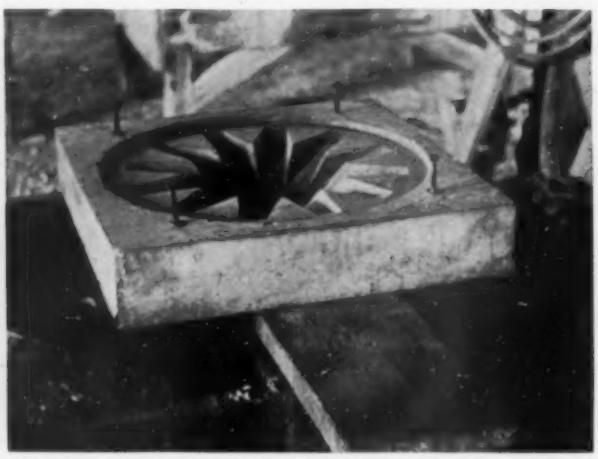
Concrete manhole covers and frames are being manufactured to replace cast iron, and concrete milk cooling tanks to replace those of steel plate and poured concrete which many farmers have been using. The addition of these three products to an already well-diversified line further fortifies the company's policy of having a number of markets to serve outside of building construction, for which it manufactures concrete masonry units and cast stone.

Shower Bases

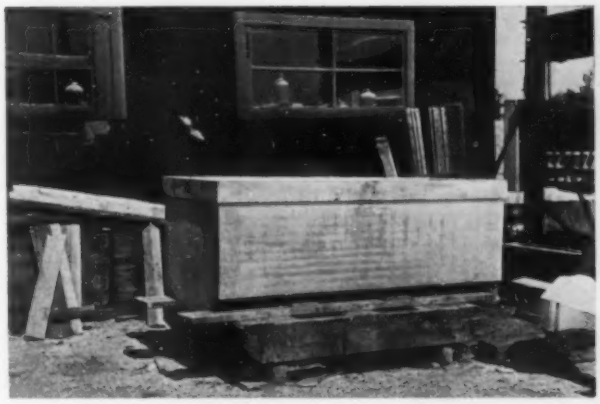
Several hundred shower bases have been manufactured and shipped to a defense housing project, on the first contract filled. These units were made to the exact dimensions of a standard 5-ft. bathtub so that the home owners can easily replace them, if they so desire, with bathtubs when tubs again become available after the war.

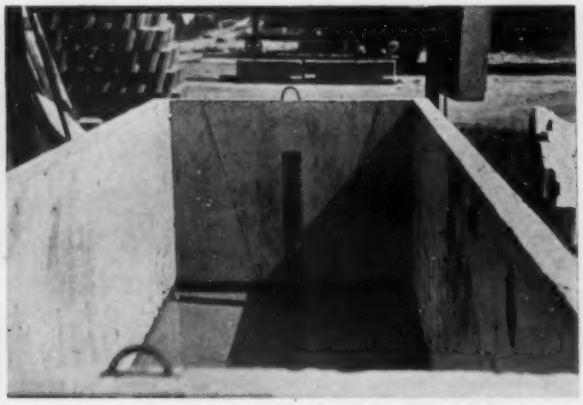
Actually they measure 4 ft. 11⅞ in. in length, 2 ft. 6½ in. in width and the concrete is 2 in. thick. The outside edge is either 6 in. or 8 in. high to form the basin, and a drain is provided near one end. The unit is installed in the home merely by placing it in space provided for the purpose and making the drain connection.

Shower bases are cast bottom-side up in concrete molds which were made from plaster of paris models shaped in the company's shop. The models are carefully and accurately



Left: Completed manhole cover on frame. Right: Precast concrete mold made from plaster of paris model





Left: This milk cooling tank was made in a burial vault steel mold. Right: Interior of the tank, showing the overflow pipe

made and imperfections corrected before casting the concrete molds from them, since the finished shower bases must have high grade workmanship.

The bases are designed for no reinforcing steel, which gives a good idea of the quality of concrete needed. Furthermore the concrete must be such that the molds can be stripped the next day in order to produce the units in quantity. They are designed for a compressive strength of 7500 p.s.i. at 28 days and most of them test 10,000 p.s.i. An extremely low-slump concrete is necessary. Aggregates are sand and gravel with a top size of about ½ in.

The bases are cast on a vibrating table, using a stainless paraffin oil on the molds. After stripping, they are steam cured and polished down with a carborundum paper to smooth off irregularities. It so happens that the brand of portland cement used is one that is unusually white and the concrete bases are therefore white. In addition to multiple unit orders for housing projects, there likely will be developed a market soon for units to be installed in private homes which are being modernized. Shower base stalls 30- and 32-in. square will also be made. On the defense housing project recently completed, the metal drain gratings were furnished by the plumbing contractor.

Manhole Covers and Frames

Manhole covers and frames of precast concrete are being manufactured according to a design developed by the Cast Stone Institute. This design has been approved by the National Bureau of Standards and is acceptable on most federal projects where manhole fittings are required. A patent is pending on the design upon application of the Cast Stone Institute. These units also are of concrete testing a minimum compressive strength of 7500 p.s.i. at 28 days and are cast in concrete molds on vibrating tables. The cover and frame as manufactured by the Badger Concrete Co. are designed to carry the heaviest wheel loadings permitted on highways, of 16,000 lb. plus 25 percent for impact.

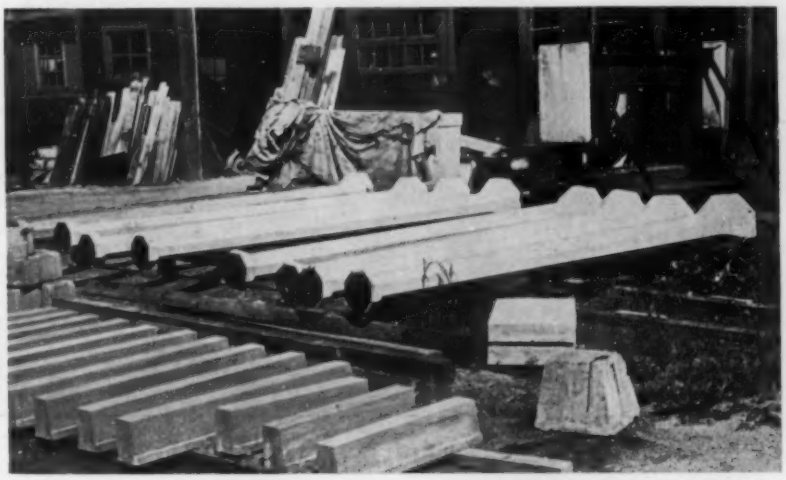
They were developed mainly to conserve critical cast iron which has always been the material used for the purpose. Where the precast cover and ring together contain only 32 lb. of reinforcing steel, for a 24-in. diameter manhole, the same size in cast iron would weigh about 150 lb. for the cover and 225 to 390 lb. for the frame. The concrete cover weighs about 90 lb. and the concrete frame about 200 lb.

Reinforcing required to withstand the designed wheel loads cannot be eliminated entirely but a remarkably small amount is needed with the high grade of concrete used. Radial reinforcing rods are attached to the enclosing channel rim (on the cover) in such a way as to make maximum use of the compressive strength of the concrete under load. The outside rim prevents chipping of the corners. It is important that the welding for manhole covers be properly done and, for that reason, the reinforcing assemblies are fabricated to specification in steel fabricating plants.

Priorities can be extended to cover the reinforcing steel when the manhole covers and frames are specified for government projects and, when made for replacement purposes for municipalities, the steel can likely be obtained on a PD-25-A rating to cover necessary maintenance and repairs. The City of Oshkosh is using some of the first ones made on a sanitary job.

In response to requests by farmers for a substitute for steel plate and poured concrete milk cooling tanks, the company has started to make them of precast reinforced concrete. These units are being manufactured in the regulation heavy steel molds

(Continued on page 96)



Lighting standards made for the City of Oshkosh

Michigan Plants Diversify

Concrete products plants are going after war business. New ideas are bringing volume to supplement war construction

(Contributed)

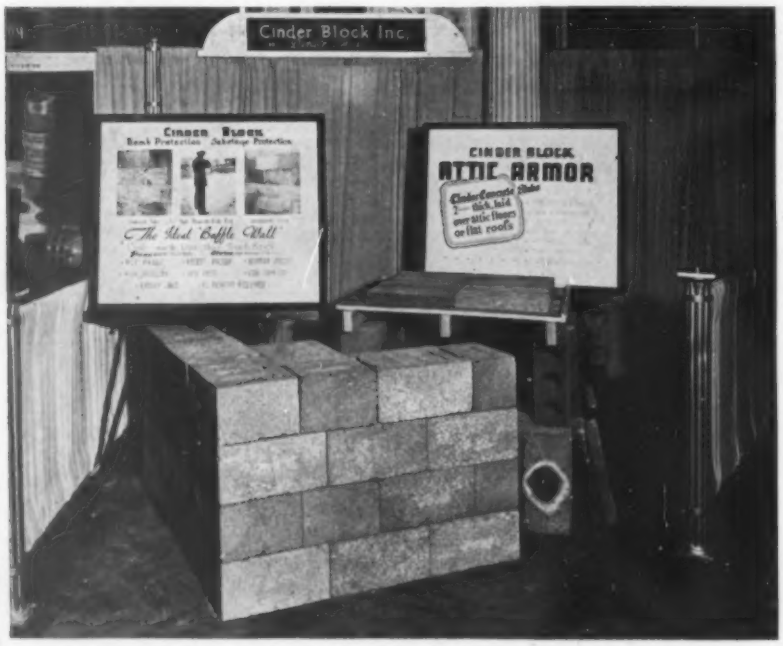
COME HELL or high water—or war—one thing has been proved by war's impact on the concrete products plants of southeastern Michigan and that is that the concrete products manufacturers can take it! They can not only take it, but they can adjust themselves quickly and with a minimum of disturbance, to operating for war purposes in war times.

Southeastern Michigan is the hot-spot of war production, and has been, from the first rumble of the approaching conflict. Headed by Detroit, the center of the "Arsenal of Democracy," the area includes Pontiac, Flint, Saginaw, Bay City, Midland, Port Huron, Adrian—and don't overlook the Willow Run Bomber Plant area near Ypsilanti and Ann Arbor.

Long before Pearl Harbor, even before lend-lease, the concrete products manufacturers felt the change coming as the hundreds of industrial plants began to expand under the rush of pre-war foreign and domestic orders. The concrete block manufacturers were called on to supply increasing quantities of concrete masonry units for new homes, new factories, new commercial structures of all kinds and for additions to existing buildings.

Most of the southeastern Michigan plants operated at near capacity in 1941. Many of them ran two shifts. Some of the larger plants operated 24 hr. a day. The 1941 production of the 45 block plants licensed in the City of Detroit exceeded 30 million 8- x 8- x 16-in. equivalents.

The first restrictions on scarce materials came in October, 1941. The sale of block for the home building market fell off. Then came Pearl Harbor, followed by Conservation Order L-41 and then the lumber freezing order. Defense area or no defense area, home building came to a standstill. Concrete products manufacturers had to do something and do it quickly. Here's what some of them are doing:



Display of concrete masonry bomb and sabotage protection at Michigan State-Wide Industrial Safety Conference by Cinder Block, Inc., Detroit. Dry-laid, sand-filled concrete masonry wall, left, and "attic armor" on cross-section of frame attic floor at right

Special War Construction

In Detroit, Cinder Block, Inc., under the direction of Roy McCandless, past president of both the National Concrete Masonry Association and the National Cinder Concrete Products Association, took a quick look over the field for applications of concrete products in war time. Like the other progressive products men, this firm could see four outlets for its products. These were straight war construction of homes and commercial buildings, special war construction, the farm market and specialty concrete products. Cinder Block, Inc., decided to go after the special war construction field: bomb and sabotage protective walls, war plant fences, "attic armor" and similar new uses for their regular product.

Display space was taken at the state-wide Industrial Safety Conference and an exhibit of bomb and sabotage protective walls was set up. This display was seen by many of the leaders in charge of plant protection from the industrial firms in this area. As a part of the same display, concrete attic armor was shown. Attic armor consists of 2-x8-x16-in. lightweight concrete slabs placed over the attic floor or over flat roofs to prevent incendiary bombs from setting fire to the frame construction. Tests were made by the Detroit Fire Department to confirm the value of this kind of protection. A magnesium incendiary, burned on these slabs at a temperature of 3300 deg. F., merely charred the surface of the concrete units. As an all-out demonstration of the protection provided by these concrete slabs, an oxy-acetylene cutting torch was applied directly to the surface for three minutes. The surface became red hot and fused under this

temperature of 6300 deg. F. the hottest flame known to man, but the lower side of the slabs did not become too hot for the hand.

This plant protection idea has brought results. The electric power company has erected permanent concrete masonry protective walls around ten of its transformer sub-stations and more are being built. The City of Detroit is installing these walls for protection of its most vulnerable points, which are the water pumping stations.

Ray Berger of the Martin Berger Block Co., Detroit, member of the board of directors of the N.C.M.A. and president of the Detroit Concrete Products Association, made a similar survey of the market and decided to specialize in the war market by supplying concrete masonry for small shops and factories. He has been kept, as he says, "too busy" all during 1942. His brother Martin is in the Army and another brother Clarence is engaged in war work. Both formerly helped carry on the business of this successful products plant.

Ben Wilk, another past president of the N.C.M.A., Standard Building Products Co., Detroit, chose the straight war construction field. His firm has supplied several of the larger factory jobs and has managed to maintain some volume in the home construction market, supplying builders who have been able to get W.P.B. certificates for war housing.

Concrete Masonry Fences

As this article is written, several of the concrete block manufacturers in Detroit are going after another big field, concrete masonry fences for plant protection. At the start of the emergency, many of the concerns with new war plants used their priorities to get wire protective fence. Now the products men are pointing out that a mile of concrete masonry fence saves 12 tons of steel and one ton of zinc, and they are being listened to. Ford Motor Co. is one of the first to swing over to concrete masonry and is erecting one of the largest concrete masonry plant fences in this area.

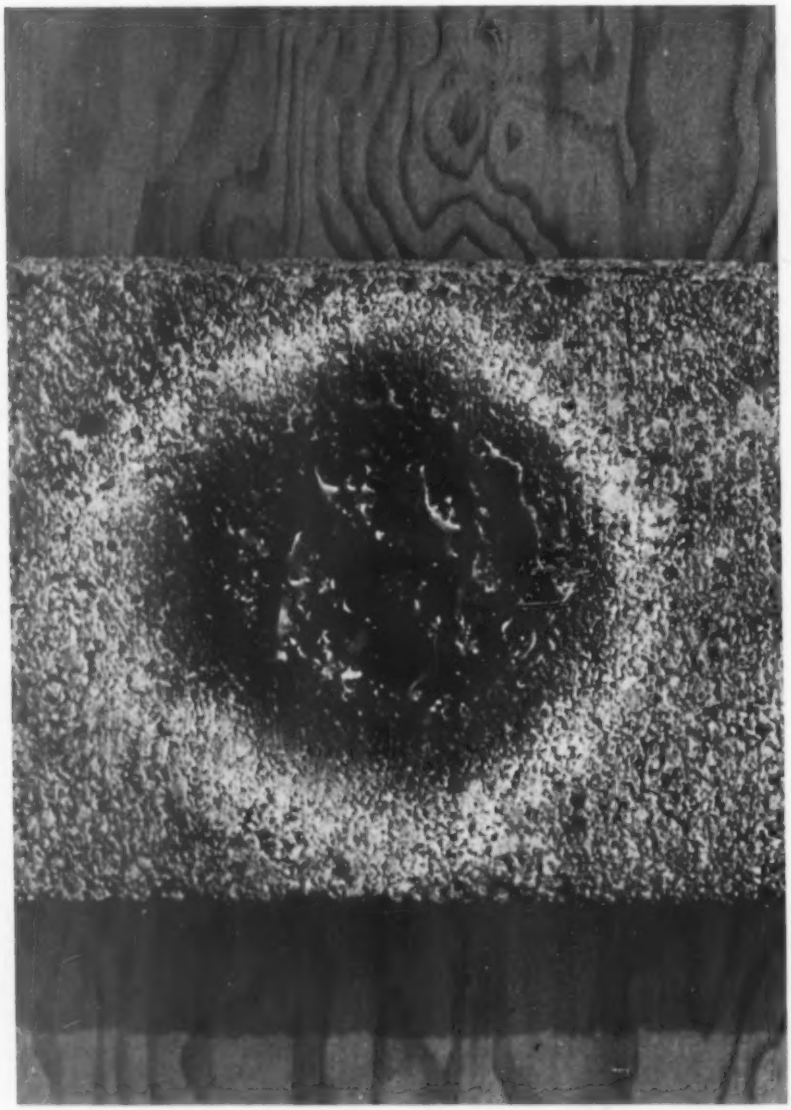
Here's an interesting idea being developed in Detroit in this connection. If an industrial firm buys a searchlight for night plant protection, it is an investment and is not chargeable against the income tax. But if the same firm hires a guard, his wages are operating expense and as such are deductable from the income tax. Hence, in providing dry-laid (no mortar), sand-filled concrete masonry bomb protection walls, the idea is being developed of renting the concrete block to the user instead of selling them. In this way the block remain the property of the manufacturer, who collects a monthly rental, about two cents per month, for the duration. The user charges the rental to operating expense. When the war is over, instead of the concrete masonry market being flooded by these block, which would be sold at salvage prices if they were the property of the user, the manufacturer would market them in an orderly manner. Since a dry-laid protective wall is essentially no more than a stock-pile on the other man's property, there is very little depreciation of the block even if the duration turns out to be as long a time as the pessimists predict, in the meanwhile, the block producer would be getting an income from them. It is possible that some such arrangement, now being developed, can be worked out to the profit of all concerned.

Concrete masonry "attic armor" for incendiary bomb protection, after magnesium incendiary (3300 deg. F.) was burned out and cold water applied in test by Detroit Fire Department. Slabs are 2 x 8 x 16 in. and weigh 15 lb. per sq. ft.

Precast Concrete Specialties

In the specialty concrete products field, several thousand precast concrete manhole and catch basin covers are specified for the sewer extensions in Wayne and Macomb counties. Since the concrete pipe manufacturers are supplying the pipe, it is natural that they should turn to the production of this new concrete product. The Superior Concrete Products Co. and the Michigan Concrete Products Co., of Detroit, and the La-Mar Pipe and Tile Co. of Saginaw are all hard at work making manhole and catch basin assemblies.

Pete Maul of the Maul Macotta Co., Detroit, is manufacturing precast



Concrete masonry attic armor after more than three minutes under the cutting flame of an oxy-acetylene torch at 6300 deg. F. The bare hand could be placed under the masonry without discomfort during the test

shower receptors for war housing and is shipping on a good-sized order he recently received.

Fred Munger, Flint Cinder Block and Tile Co., Flint, is making precast fuel oil storage tanks for home use. Another of Mr. Munger's activities is in the plant protection field. He had the Flint police chief fire high-powered rifle bullets into a sample protective wall for a test, with other city and O.C.D. officials as interested spectators. He has a permanent display of four dlifferent types of concrete masonry plant fences in front of his office.

Although the manufacturer prefers not to be named at this time, another conversion to a specialty product is taking place in southeastern Michigan in the production of precast concrete storage tanks for compressed cooking fuel gas for home use. These relatively small tanks are provided to users of gas for cooking in areas beyond the gas mains, by the gas producer.

Charles Niederstadt, C. A. Niederstadt Co., Saginaw, has worked out a merchandising program with the local Sears Roebuck and Co. store in his city so that his precast concrete septic tanks are sold by the retail store. He reports a growing number of sales through this selling plan.

Two of the other Saginaw plants have found a profitable specialty. Saginaw, origin of the great Michigan lumber industry in pioneer days, has thousands of small houses built on cedar posts, which are rotting out. Schweinshaupt Bros. and W. F. Raese are getting a worthwhile volume of business in manufacturing precast concrete posts to replace them. These posts are 8x8 in. and vary in length up to three feet. No reinforcement is needed.

Big as all these fields for concrete products are proving to be, by far the largest field is the farm market. Many of the products manufacturers were amazed when they began casting around for new outlets to find that the farmers can keep them almost as busy as the townspeople, especially now that building is so greatly restricted in the cities.

Boice Bros., Pontiac; Roy W. Moore. Rochester; Tiger Cement Products, Royal Oak; William Moors, Fraser; John A. Whitman, Midland, all plants that ordinarily sell only in residence and industrial fields, are outstanding examples of concerns that are getting a good volume of farm business this year.

The plants located in the outlying rural districts that normally get considerable farm business are very busy with the increased farm business of 1942. Cox Bloc Co., Lapeer; Ferguson Block Co., Davison; Eno Cement Products Co., Millington; Grand Blanc Cement Products Co., Grand Blanc; all are examples of rural companies that are hard at work in the farm field.

W. A. Moore of Flint and Charles Carrier, Vernon Cement Products Co., Vernon, report that they started selling concrete masonry for home storage of vegetables the day after plans were issued by the Portland Cement Association and that they are getting worthwhile leads in addition to the jobs they sell. Luther Randolph, Ann Arbor, is making a special sales effort in the farm market and finds that it is paying off in business.

The story of southeastern Michigan is very much the story of the entire concrete products industry. There are many different ways in which products manufacturers can adjust themselves to war conditions. No one concern wants to work in all the various fields. Obviously, only a very few plants can profitably manufacture some of the specialties.

Concrete Catch Basin Grates

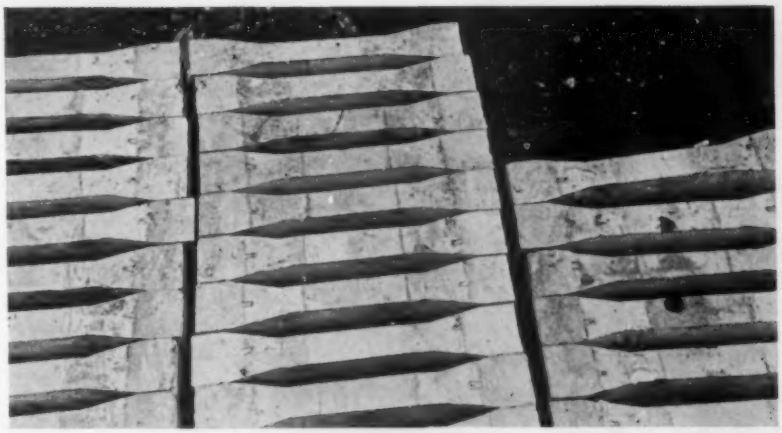
North Shore Concrete Joist Co., Northfield, Ill., supplies multiple unit grates for airport drainage; also makes precast mullions and manhole fittings

AIRPORT construction has created a demand for concrete catch basin grates of various kinds. Precast concrete catch basin grates are replacing cast iron in many locations.

North Shore Concrete Joist Co., Northfield, Ill., has just completed a contract to furnish 20,000 precast concrete multiple-unit grates, designed for use in intercepting storm water adjacent to airplane runways being built at a Navy airport. The units can be made for different widths, namely 12-, 18- and 24-in. clear spans, depending upon the width of the intercepting inlet into which storm water flows by gravity from off the adjoining runway. These units are supported on a job-poured concrete shelf paralleling the runways.

Those made by the North Shore Concrete Joist Co. were mainly for 24-in. spans, with depths of 5 to 8 in., depending upon the wheel load to be supported, and averaged about 80 lb. in weight. Having a series of individual grates has the advantage of making replacement inexpensive, should a grating be damaged. They are designed to support a live load of 70 p.s.i., to accommodate airplanes running over them, and a compressive strength of 5000 p.s.i. is specified at the age of 28 days. About 4 lb. of reinforcing steel is required per sq. ft. as compared to a weight of 40 lb. per sq. ft. for cast iron grates that have been displaced. It is said that the cost to the Navy is about one-half, for precast concrete.

The company is principally a manufacturer of precast concrete joists and slabs which are made on vibrating tables, so it was a simple procedure to adapt the plant to the manufacture of concrete gratings by vibration. An arrangement had to be worked out to cast the units for mass production and early mold release in order not to have too many steel molds made up for the job. The contract called for fulfillment in 59 days, which required that the plant be able to manufacture 400 to 500 units a day.



This view of multiple-unit concrete grates in stockpile gives an idea how they are laid down alongside an airport runway for actual use

A vibrating table was set up to cast 10 units at a time in a single multiple mold. The reinforcing, consisting of ½- and ⅝-in. round bars hooked at both ends and wire stirrups twisted to them, was assembled by one man. Other men assembled the molds just ahead of the vibrating table and an overhead chain hoist with a swinging boom was used to handle the molds on to the table and, when finished, to the stockpiling area.

Sand and gravel aggregates were used with high early strength portland cement in the ratio of 1:2:2 by weight, with low water content, since slump was undesirable. Concrete was mixed in a one bag mixer and handled into the molds from wheelbarrows. Enough molds were made for the required daily schedule, which means that the molds had to be stripped the day after they were cast. Form oil was used. Curing was done under wet burlap and practically the full strengths were developed in 5 to 7 days. Finished gratings were deliv-

(Continued on page 98)

Stockpile of precast concrete mullions made for an industrial plant. Mullions serve as the framework to hold glass block

READY MIX

The France Stone Co. Producing Concrete

Largest quarry operator sets up facilities to serve farmers and small communities

Serving a wheelbarrow bridge job with "Stonecrete"

READY MIXED concrete was put on the market in Ohio within the past year by The France Stone Co. of Toledo. This is one of the few instances where a large producer of crushed stone has turned toward ready-mixed concrete to enlarge its scope of activities. The France Stone Co. is probably the largest stone producer in America, yet its ready-mixed concrete activities are modest in extent and confined to localities remote from the large city industrial centers.

Plants are located at three quarries; The France Stone Co. plant at Bellevue, the subsidiary, Marion Stone Co. plant at Marion; and at The Mount Vernon Sand and Gravel Co. plant at Fredericktown which is also a subsidiary company. Bellevue has a population of 6000 people, Fredericktown has about 1300 and Marion 31,000. Neither location is within reach of anything but small towns and communities and, therefore, much of the concrete is sold in comparatively small yardages.

Fredericktown plant handles sand and gravel by belt conveyor

Marion plant is designed to receive crushed stone and sand by bucket elevator

Operating Methods

Marion has some industry, of course, but at the other locations the farmer and the local home owner or builder are the principal users. State highway structures, such as bridges, take some of the yardage. At Bellevue, a Blaw-Knox bulk cement and aggregates plant purchased in connection with the building of a concrete highway, to furnish batched materials to the contractor, is available for batching. However, the truck mixers operated by the company operate most of the time out of the other two locations. They are 2 and 3 cu. yd. Jaeger high dump mixers on Ford and Reo chasses.

Natural concrete sand is available, by trailer truck from Fredericktown to the other locations and manufactured stone sand from Kenton, Ohio, where France Quarries Co., another subsidiary, is located.

Local sales representatives of the company sell the ready-mixed concrete. Aside from occasional highway construction and some industrial building, corn crib floors, foundation floors, feed floors, barnyard floors, etc., are the kinds of jobs for which ready mix is sold. Concrete is merchandised as "Stonecrete". The truck mixers have drum revolution counters which are required for State highway construction.

Both the Fredericktown and Marion batching plants are designed for handling cement in sacks. Their designs differ in some respects. At Marion the plant consists of a three-compartment Blaw-Knox bin that will hold 110 cu. yd. of aggregates and a 2½ cu. yd. batcher with a three-beam scale. Aggregates are placed in the bin compartments by a Columbus Conveyor Co. bucket elevator, with a swivelling chute overhead. Materials

are fed into the bucket elevator from a truck hopper by a vibrating pan feeder.

Mixing water is pumped into a receiving tank on the batching floor by a Byers deep well pump and measured into the mixer tanks for later introduction into the mixer drums. Cement is stored in sacks in a nearby warehouse and wheeled over a ramp to the batching floor. The sacks are emptied into a by-pass chute at the batcher, directly into the mixer drums. Steam is circulated through piping inside the bins to heat the aggregates in the winter, and mixing water is heated by live steam. One man operates the plant and, on off days, works in the stone crushing plant. Production at Marion started in August, 1941.

At Fredericktown, the plant comprises a three-compartment Blaw-Knox bin holding 80 cu. yd. of aggregate, with a 2-cu. yd. weigh batcher. Aggregates, in this plant are elevated 85 ft. vertically by a 20-in. belt conveyor, 122-ft. centers, that has an inclination of 19 degrees. Aggregates are trucked to a hopper feeding this conveyor, either from the aggregate plant bins or stockpiles. A swivel spout over the bin is operated at the hopper by a cable to drop the sand and gravel into the desired compartments.

Cement is trucked to the plant in cloth sacks and elevated to the batching floor by a Barber-Greene cement elevator. Storage is for one carload of cement. Here again, a steam boiler generates the steam to heat the aggregates by radiation from pipe inside the bins, and the mixing water is heated by live steam. A truck can be batched in 1½ minutes. The plant is entirely enclosed.

R. R. Dwyer is plant manager of the Fredericktown plant; R. J. Snyder at Marion; and B. C. Raymond at Bellevue.

At Marion, Ohio, "drawbridge" between cement storage and plant must be raised to let trains through

View of Fredericktown plant from receiving hopper, showing remote cable controls for filling bin compartments

Industrial Progress Follows Sewerage

American and European made concrete pipe machinery have contributed much to the sanitation and the development of the Latin Americas since the last war

By GEORGE W. HOFFMANN

MAY 3, 1924, was a memorable day in the history of Honduras, Central America. On that day a national celebration inaugurated the erection of an American-made concrete pipe machine. The machine had been brought down by a New York contractor, who had accepted together with a native firm, the contract for a sanitary sewer system in the Honduran capital.

Eighteen years later, almost to the day, in early June, 1942, this celebrated machine that had made hundreds of miles of corrugated concrete sewer pipe for the Republics of San Salvador and Honduras, was having another, less exciting celebration.

Pan American Airways had flown the machine from Tegucigalpa, Honduras, and installed it in Brownsville, Tex. Today the "Old Lady" is guarded by U. S. Marines in service of the armed forces producing at capacity for Pan American Airways corrugated pipe at the rate of two a minute 6 in. diameter and 3 ft. long. Such is concrete pipe history in the making.

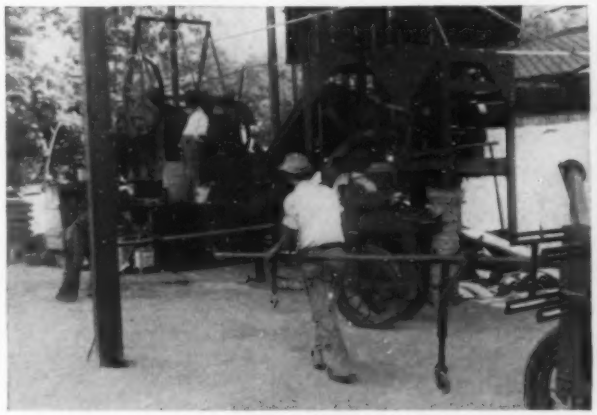
Since those days in May, 1924, much American and European made concrete pipe machinery have been installed in Central and South America. Most of the sewer pipe machinery is McCracken, while wire-reinforced, concrete pressure pipe is made on Italian machines.

It is a fact that the development of Latin America's economic and industrial status can be measured by installations of corrugated concrete sanitary sewer pipe, and native-made vitreous clay pipe. However, such quality clay pipe cannot be profitably transported far from its point of manufacture. Breakage multiplies initial cost figures for the distant delivered job.

McCracken portable machines for instance have been rolled from the shores of the Caribbean Sea in Colombia and Venezuela across narrow passes in the Andes into the jungles and llanos of the upper Amazon valley.

In Venezuela the first machine

American concrete pipe machinery, shipped for this plant in 1924, turned out the pipe for a sanitary sewer system in Honduras. Many machines have been imported since for sanitation purposes



Some of the portable plants of the kind set up in the jungles to manufacture concrete pipe

was installed only a few years ago in the midst of an Eucalyptus forest near Caracas. For months only the sky was the roof over the plant. Today several high production machines produce at capacity a fine quality of corrugated concrete pipe along with Besser blocks in modern plants.

Concrete Products Plants All Over Latin America

Similar concrete products plants all over Latin America are again making national history. When the war broke out and we had realized that our own safety depended to a large extent on South America, our Government called the one man who knew how to strengthen economic ties with these important "Good Neighbors."

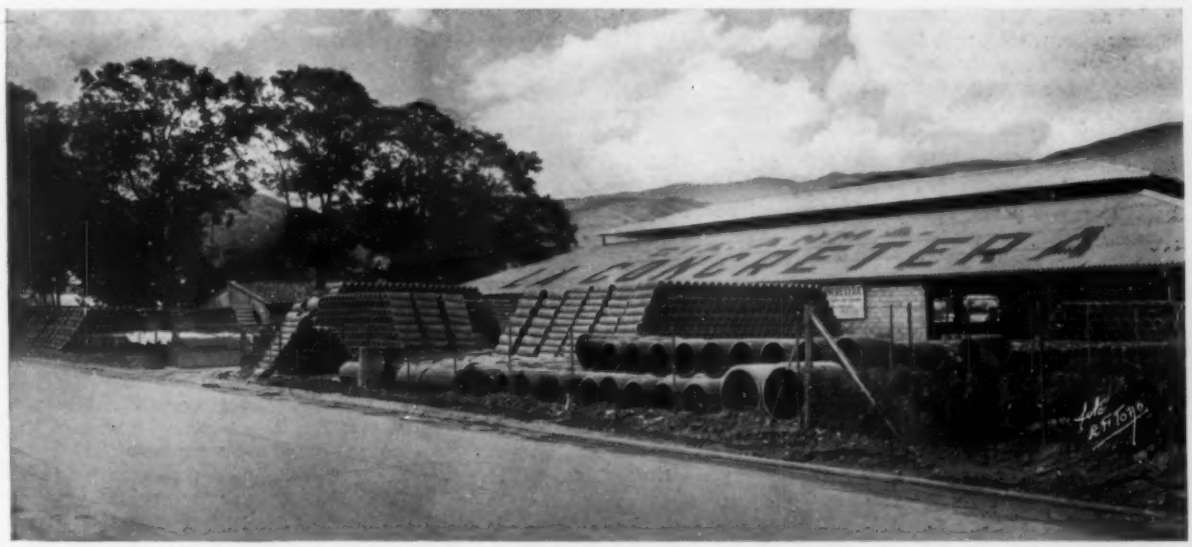
For many years past the "Rockefeller Foundation" has been conducting extensive fights against malaria, the bubonic plague and other tropical diseases all over the Latin Americas. On the basis of such experiences a young Rockefeller was put in charge of a bureau of "Inter-American Relations." He knew that only sanitation could place these impoverished, undeveloped Latin American countries on a basis of modern civilization, that could be ready to accept industrialization on a large scale. Here first of all was the question of building a middle class which would furnish labor and employes, create that producer-consumer element that after all is the driving power of all progressive Nations.

In consequence, there are extensive sanitation programs under consideration and in actual operation now in Costa Rica, Panama, Ecuador, Peru, Bolivia and Paraguay.

Export Market for Concrete Pipe Machinery

In harmony with these projects our armed forces have acquired McCracken and other pipe machines to produce corrugated concrete sewer and drain pipe and drain tile to provide for sanitation wherever they have gone.

From Alaska to the Straits of Magellan, concrete pipe is doing its part for final victory in this struggle for the freedom of the Western Hemisphere, a silent, ever-ready soldier on duty all the time—a pride of our great American Concrete Products Industry.



Modern high production plant that is typical of many plants that are a part of the development of Latin American civilization through sanitation and resultant better health conditions

Concrete Mix in Sacks

Several years of research behind development of special mixes and packages for many applications

By ARTHUR AVRIL

Arthur Avril

AFTER SPENDING several days trying to coördinate the information about "Sakrete" which would be of interest to the readers of ROCK PRODUCTS I have decided to just ramble from one thought to another in the hope that when the end of this article is reached, it will have been interesting.

Sakrete, which is dry pre-mixed concrete in sacks, was born July 14, 1936. It waddled along gathering customers here and there, who became enthusiastic about its convenience, ease of handling, labor saving, workability, strength, etc., so that it wasn't long until home owners, factory superintendents, utility engineers, highway engineers, plumbers and contractors started telling each other about it.

The home owner said, "It's a great idea, I can now patch my sidewalk, plaster my basement, build a fish pond or do a thousand and one small concrete jobs around the house myself and believe you me, it stands up. The Sakrete people say it's designed to give a strength of better than 4000 lb. per sq. in. when cured for 28 days if I follow directions on the bag. Why that's twice as strong as the average concrete sold. Even if I do abuse it a little, I'll still get a good job."

The factory superintendent told his associates in other factories how easy it was to repair floors, build machine bases, and do any number of small concrete jobs around his plant with Sakrete. He told them how clean it was to handle, how his men didn't spill it all over the floor as they did loose sand and gravel because it was in a clean, tough, multi-wall paper sack and could be carried directly to the site of the work without interfering with the normal plant operations. He also brought out the fact that he did not have to pay for sweeping the entire plant after doing a small concrete job. He did not stop there, however, he also told them that he could store Sakrete for months without having it spoil. This really saved time and money because if a bad spot appeared in the floor, he could repair it before it caused some costly accidents.

For Important Special Jobs

It didn't take the utility engineer long to realize that this Sakrete was both a time saver and a money saver. Take for instance a gas and electric company or water works which is always tearing up sidewalks and streets to repair old services or install new ones, to make repairs, a maintenance crew may have to drive 30 or 40 miles a day to do a dozen patches. With loose materials they spent an hour or more loading their truck because the sand and gravel had to be shoveled on by hand. Each patch required about 2 to 3 cu. ft. of concrete.

By using shovel-guess methods, 4 or 5 cu. ft. of material would be shoveled off the truck at each cut. The crew then squared up the opening and threw the dirt on a pile. The cement and aggregate were proportioned by shovel fulls and mixed together dry. After adding the water and giving the concrete its final mix, it was put into place and finished. By this method they were able to do only about 8 or 10 patches a day because of the distance between patches, the slow method of loading their truck, the labor required for unloading and mixing their materials and above all, the time it took to go back to each job to clean up the waste material and dirt. The dirt couldn't be shoveled on to the truck when the patch was finished because it would contaminate the loose sand and gravel, therefore an extra trip had to be made involving considerably more truck time. For this type of work it was estimated that more than one-third of the repair crew's time was consumed in loading their truck before starting out and cleaning up after the patches had been made.

With Sakrete, however, engineers had found that a crew could load their truck in five or ten minutes, that each job could be cleaned up as soon as it was finished because there was room on the truck to carry the dirt and since Sakrete was packaged, there was no danger of contaminating material. They realized that since Sakrete is a mixed material, it took up only about two-thirds as much room on a truck as the same weight of loose sand, gravel and cement, assuming that the sand was carried in high sided compartments so as to use a minimum amount of floor space. This was not always possible, so the carrying capacity of the truck was still further reduced due to the aggregate assuming its normal angle of repose thereby taking up more floor space.

Space Saving

The following analysis substantiated this fact. The voids in the coarse aggregate in Sakrete were filled with fine aggregate and cement, whereas the loose material retained all of its voids. For example, a cubic foot of Sakrete weighs about 139 lb. in comparison to 94 lb. for cement and about 105 lb. for aggregate. Sakrete can be stacked vertically, about 8 or 10 bags high without special sideboards, making it possible to conserve the maximum amount of truck bed space. In fact it is easy to save as much as half of the floor space over that required for loose material. This enables the maintenance crew to carry more material on their truck and still have plenty of room to carry clean-

up dirt. In a few words the crew saved time loading their truck, they saved mixing time and they saved time by not having to return to each job to clean up after the patches had been made; so instead of doing 8 to 10 patches in a day they increased their production to 18 to 20 patches per day.

The contractor found that he could save money and time by carrying a few sacks of Sakrete on each job as a reserve in case he needed a few cubic feet of concrete to finish a wet ready-mixed concrete pour. Without Sakrete he had to wait at the end of the pour, paying a crew of 5 to 10 men for the ready-mixed concrete truck to return to the job with enough material to finish the pour. This meant from one-half hour to one hour waste time. By finishing with Sakrete he could save the cost of all of the waste time which in every case is four or five times as much as the difference in cost between Sakrete and wet ready mixed concrete.

City truck loading Sakrete at the plant

Contractors have also used Sakrete on jobs that were inaccessible and required costly handling methods. For example, one contractor was building a penthouse for a new elevator on top of an old 18-story office building. The only way to get material to the site of the work was to elevate the concrete in the passenger elevator. He couldn't block the street and he was asked to keep the lobby and elevators clean. The only logical answer to his problem was to use Sakrete. He could store it in the lobby in the daytime and he could elevate the Sakrete whenever the elevators were available. Since Sakrete is in a clean dust-tight package, there was no dirt whatsoever to clean up.

Another contractor had to repair a break in a sewer located in a field several hundred feet from the road. Every bit of material had to be carried to the site by hand, so, he too used Sakrete. We could cite any number of jobs like this, where Sakrete was by far the easiest and most economical material for a contractor to handle.

Planned Merchandising

These markets did not develop over night. They were the result of a planned method of merchandising which consisted of a combination of newspaper advertising, direct mail circulars, advertising letters, dealer promotion and personal solicitation. Our first move in merchandising was to sell most of the building material dealers and leading hardware stores within an economical shipping radius, a reasonable supply of Sakrete and Sakrete Sand Mix. After a number of dealers had been supplied, we furnished them with stuffers to pass out to their customers or mail with their invoices. They were also supplied with metal signs to be hung in a prominent place so that the customer who needed a little concrete could see it when he was at the dealer's yard ready to make a purchase. We followed this up immediately with a series of newspaper ads in both the real estate and gardening sections of the Sunday newspapers. By attempting to reach the general public these three different ways at the same time, it wasn't too long until a substantial demand was created.

Operator sewing filled sack

In addition to our advertising, we made a practice of contacting the utilities, governmental branches, contractors, building managers and plumbers personally because we wanted to be sure that these larger potential users of Sakrete would have the opportunity to become acquainted with its advantages. These personal

Packaged mixes for different purposes

Top to bottom: Applying "Cablecrete" to power cable, wrapping cable after fireproofing it, sealing cloth wrapping with sludge coat, removing Cablecrete

contacts helped our dealers sell a substantial volume of Sakrete.

We started by producing only the 90-lb. sack of Sakrete and the 80-lb. sacks of Sakrete Sand Mix. It wasn't long, however, until we found that there was a substantial demand for smaller packages, so we added a 45-lb. size in both mixes and an 11-lb. sack in the Sand Mix. The smaller packages sold best through hardware stores.

Before we could start producing Sakrete, a thorough study of production methods, mix design, distribution and sales promotion procedure had to be made.

Patented Dry Batching

The production problem was the first to which we gave full consideration. Since Sakrete was new and had to be developed from the beginning, the first problem confronting us was whether or not the raw materials incorporated in concrete could be properly prepared for packing and warehousing so that the trade could purchase Sakrete and not have it harden or deteriorate even though it was not used within several months from the time it was packaged. This meant that the aggregate had to be mechanically dried so completely that it was not only necessary to drive off all surface moisture but also to remove from 70 to 80 percent of the absorbed moisture. We considered a direct-fired, oil-burning drier first, because of economy. This proved unsatisfactory for two reasons. First there was always the danger of coating the aggregate with a film of oil in case there was a blow-by in the burner. The natural results would be an inferior product. Second, in order to remove the absorbed moisture as as well as the surface moisture, the extremely high temperature of a direct flame on the aggregate had a detrimental effect on the aggregate particles. We finally solved this problem by adopting the use of a semi-indirect, revolving drier fired by gas.

When we were satisfied that we had a good solution to the drying problem, we made a study of the next most important production problem of how to produce a product of uniform quality from the standpoint of both strength and workability. It was found that commercial mixes used in mass construction work were too harsh to handle in small quantities, so we devised a method of designing mixes, which after being used for the past six years, has proven to be very satisfactory for our purpose. It is based on the reduction of the variable factors encountered in the design and production of concrete mixtures to a minimum. All of our mixes were designed to give a strength of 4000 lb. per sq. in. regardless of the top size of the aggregate. By establishing this high standard, we could meet the most exacting specifications and serve the trade with a good workable concrete.

In order to maintain the uniformity of one sack of Sakrete to another, special machinery had to be designed to make it possible to mix and batch each sack individually, because it is a known fact that thoroughly dried materials will segregate to such an extent that should we have tried to mix a large batch in any quantity to exceed the amount required to fill a sack, we would have been confronted with the serious problem of segregation, which

Utility maintenance crew repairing sidewalk with "Sakrete"

would have resulted in one sack containing too much coarse aggregate, another too much cement and another too much sand. Our efforts along these lines made it possible for us to obtain a satisfactory patent to protect our method of operation.

The equipment necessary to handle cement and aggregate to the drier and from the drier to the bins, conformed to standard practice. It was, however, necessary to coördinate the handling capacities of the various pieces of machinery in order to eliminate the possibility of a bottleneck, which would have seriously affected the rate of production and could possibly have had a material effect on the quality of the product.

Packaging Problems Solved

Being reasonably satisfied up to this point that our plant would produce a uniformly good product with good warehousing properties, we turned to determining how it should be packaged, what type of package should be used and how the package should be closed after it had been filled. Our first thought was to use a valve bag. We soon discarded this idea however because due to the coarseness of our aggregate the valve had to be too large to stay closed when the full bags were handled. Alternatives were to use open mouth bags to be tied or sewed. The tied bag was unsafe and unsightly so we finally adopted the practice of sewing the bag shut after it had been filled. This method resulted in a neat dust-tight package which could be handled easily and with safety by anyone.

All of this experimental work was carried out before the plans for our plant were even drawn. The care with which we handled each problem pertaining to production was justified, because we have had to make no changes in our machinery or operating procedure.

We have, however, added more products to our line by taking advantage of the need for materials which could be prepared and packaged with our equipment. Due to the number of calls for a waterproofed material for stopping leaks in basement walls, etc., we added Sakrete Water-Tite. It proved to be a good item and a valuable addition to the Sakrete family.

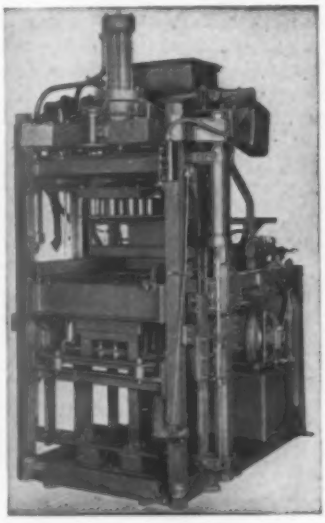
Next came Sakrete Mortar Mix. It was developed to take care of small brick, concrete block or stone jobs. It was not only used to build brick mantles, lay up block for small buildings, etc., but has also proven to be an ideal material for tuck pointing.

About four years ago the superintendent of underground construction with the local power company approached us with the question as to whether or not we could assist his chemist in developing a fireproofing material for lead covered power cable to protect it in manholes and tunnels. A considerable amount of preliminary work had been done on this problem over a period of several years by George Lineback, their chemist. His basic research and our knowledge of cementing materials enabled us to develop a fireproofing material that solved their requirements for a good

GOSH!!
SAKRETE
READY MIXED CONCRETE.... IN SACKS
AHH!!
SEE for yourself how simple and easy it is to use SAKRETE PRODUCTS, Modern Concretes that come in dust-tight, durable paper sacks. No Muss — No Fuss — No Experimenting for the right mix. You will find them economical, fool-proof, convenient to use and easy to handle.
SAKRETE
—a dry ready mixed concrete to patch sidewalks and concrete floors, build garden pools, flagstone walks, small foundations for machinery, and footings for fence posts, waistline posts, and to make a thousand and one other improvements. Comes in 90 and 45 pound dust-tight paper sacks. 90 pounds cover 8 square feet, 1 inch thick.
SAKRETE SAND MIX
—a dry ready mixed cement grout, to plaster old stone and concrete walls, to patch cracks, point up stone and block walls, and other uses requiring a strong cement grout. Comes in 90, 45 and 11 pound dust-tight paper sacks. 90 pounds cover 16 square feet, ½ inch thick.
SAKRETE WATER TITE
—a dry, ready mixed, water-proofed cement grout, to stop leaks in basements, pools, etc. Comes in 90, 45 and 11 pound dust-tight paper sacks. 90 pounds cover 16 square feet, ½ inch thick.
SAKRETE MORTAR MIX
—a dry, ready mixed, water-proofed mason's mortar, to lay brick, concrete block, and field stone, in jobs such as fireplaces, out-door grills, garages, chimneys, stucco, etc. Comes in 90, 45 and 11 pound dust-tight paper sacks. 90 pounds cover 16 square feet, ½ inch thick.
SAKRETE WHITE MORTAR
—a snow white, strong plastic, dense, non-fading, non-staining, uniform, white mortar, good for pointing stone work, laying glass brick and for white stucco. Comes in 90 pound dust-tight paper sacks. 90 pounds cover 16 square feet, ½ inch thick.
WHITE SAKRETE
—a snow white, strong plastic, non-fading, dense, water-proofed, uniform, ready mixed, white concrete good for white lines and curbing in highways and for white floors. Comes in 90 pound sacks which will cover 8 square feet 1 inch thick.
CABLEKRETE
— a dry, ready mixed material for fireproofing electric cable in manholes, and for plugging telephone ducts. It is uniform, fire resistant, adhesive to smooth surfaces and economical to use. It will not corrode lead cable. In packed in 90 pound and 11 pound sacks. 90 pounds cover 16 square feet, ½ inch thick.
SAKRETE MASTIC MIX
—a special mixture to be used with Sakrete Mastic. For repairing heavy duty floors. It is water-proof, acid resistant, alkali resistant and oil resistant. Can be troweled to a feather edge. The old floor can be covered with as little as ¼ inch with satisfactory results. Comes in 90 pound sacks which, when mixed with 20 pounds of Sakrete Mastic, will cover 20 square feet, ½ inch thick. For large areas contact your contractor
SAKRETE PRODUCTS
—meet the most rigid specifications;
—are economical because they eliminate waste, save labor, speed up work, and make a lasting patch;
—are fool-proof because automatic machines proportion each sack accurately;
—are easy to use—merely add water as directed and mix thoroughly;
—can be stored in a dry place for months without spoiling because the materials are carefully processed before being sacked.
—are ideal for winter work because they eliminate thawing, frozen sand and gravel;
—are the most convenient way to do all small concrete jobs—Just measure the opening to be filled and order exactly what you need.
SACKRETE, INC.
APPLE STREET AND VANDALIA AVENUE
Cincinnati, Ohio

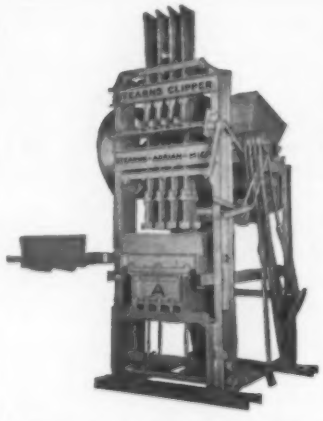
Sample of the kind of advertising copy used

HYDRAULIC VIBRA-PRESS



A High Production Machine
Making Blocks which are
Demanded by the Contractor
Endorsed by the Architect
Desired by the Mason

The KENT MACHINE CO.
CUYAHOGA FALLS, OHIO



"ANCHOR"

Complete equipment for making concrete, cinder and other light weight aggregate units, including engineering service for plants and revamping of old ones for more economical service. Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers, Stearns Jolicrete, Stearns mixers, pallets, Straublox Oscillating attachments, etc.

Repair parts for Anchor, Ideal, Universal, Stearns, Blystone mixers and others.

Anchor Concrete Mchy. Co.
G. M. Friel, Mgr. Columbus, O.

economical and permanent cable fireproofing which had the very desirable feature of inhibiting corrosion of the lead sheath.

When the problem was presented to us, we were asked to produce a material that would not corrode the lead sheath of the cable, would be easy to apply, would eliminate the necessity of coating the cable with asphalt or paraffin treated cloth, would stick to the cable while it was in the wet form being applied, would stand up under moist manhole conditions, could be easily removed for cable repair, and would resist arcing temperatures long enough to prevent damage to other cables in a manhole in case of a failure. This was a large order but we were successful, thanks to the efforts of Mr. Lineback, in producing a material which met the above specifications in every way. As a result we have been marketing Cablekrete nationally for the past three years. Major utilities, both power and telephone, and some of the larger war plants such as Wright Aeronautical Corp., Buick Aviation Engine plant, Revere Copper and Brass Works and others have used it extensively to fireproof power cable in manholes and tunnels.

The most recent products added to our line are White Sakrete and Sakrete White Mortar. The White Sakrete was developed specifically to supply a demand for white concrete to be used for marking traffic lanes and building white curbing in streets and highways. The White Mortar was developed for use in pointing up stone work requiring an absolutely stainless mortar and for pointing walls made of field stone.

In the development of these products we made a thorough study of various types of aggregate from the standpoint of color and durability. We found several types of white aggregate but only one met our requirements from the standpoint of color, durability and grading. With this aggregate we were able to design a workable mixture which would stay white and would stand up under extreme variations in weather conditions. Before we attempted to market these two products, thorough tests for durability, and strength were made to substantiate any claims we would be making as to quality and economy. Even though the cost of our White Mortar and White Sakrete was substantially higher than the common methods of using available aggregate and white cement, we were able to show that our products were far better, did not take as much labor to handle and were far more durable, which over a period of time proved to be most economical.

Preliminary tests made by the H. C. Nutting laboratories gave an indication of the superiority of White Sakrete over other materials, but we did not stop at this point. Samples were submitted to the State Highway Laboratory to be checked for resistance to the elements through actual freezing and thawing tests. We are not privileged to disclose the results, but I can state that White Sakrete proved to be far superior to mixtures of white cement and locally available aggregate, from the standpoints of both color and quality.

Since most of our products are used by the layman who knows very little about the use of concrete, we made a special effort to draw up a complete set of instructions which could be easily understood. These are printed on the back of each sack. Each different product has its own set of directions. These directions were not only helpful to our customers but also aided us in our marketing program by arousing the interest of the casual observer.

It has been a pleasure to produce and market Sakrete Products. Since our plant was designed to operate more or less automatically and has never required more than two men for capacity production, we have kept our labor and production problems at a minimum. Even though our selling problems were many and we were handicapped by having to sell our products at a substantially higher price than separate concrete materials, we were able to make many friends by pointing out that Sakrete Products served a definite need by improving the workmanship on small concrete jobs, saving labor, reducing truck time and increasing job production.

Precast Shower Bases

(Continued from page 83)

used to manufacture concrete burial vaults. It is only necessary to put fillers in the molds to give the necessary squareness to the cooling tanks. The tanks measure 2 ft. 6 in. by 7 ft. 2 in. and are 28 in. deep, with an overflow pipe cast in place for the continuous circulation of water through the tank. The wall thickness is 1½ in. and the reinforcing required weighs about 6 lb.

It is expected that all reinforcing will be eliminated from these units later without ill effect, by re-designing the concrete mix to be used. The same practice will be followed in

We're Over 90% WAR PRODUCTION

. . . *Yet*
High Priorities Plus MULTIPLEX Service Still Assure Proper Upkeep of Your
MULTIPLEX Concrete Machinery

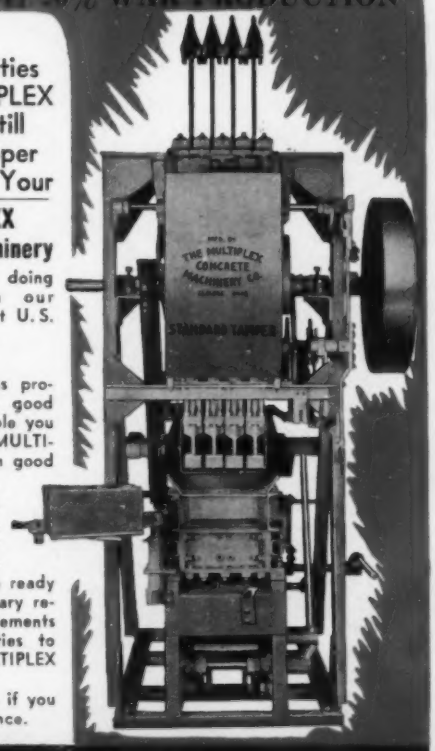
SURE — We're doing everything in our power on straight U. S. War Production.

But . . .

Uncle Sam has provided you with good priorities to enable you to keep your MULTIPLEX machines in good running order.

Even though we are "busy as can be" on war production orders, we are also ready to furnish necessary repairs and replacements on these priorities to keep your MULTIPLEX "ship-shape."

Write or wire us if you need our assistance.

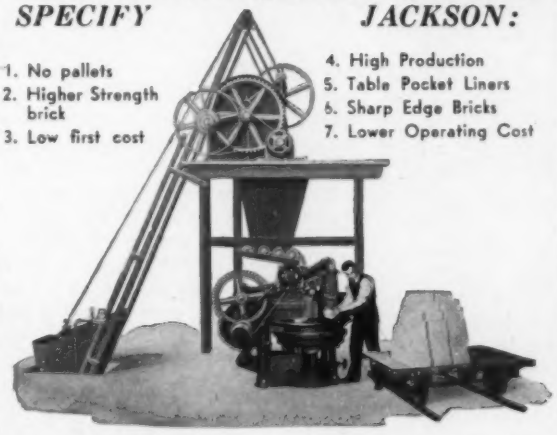


MULTIPLEX CONCRETE MACHINERY
ELMORE, OHIO

1 JACKSON BRICK MACHINE = 1 COMPLETE EFFICIENT PLANT

Seven Reasons Why It Will Pay You To SPECIFY JACKSON:

1. No pallets
2. Higher Strength brick
3. Low first cost
4. High Production
5. Table Pocket Liners
6. Sharp Edge Bricks
7. Lower Operating Cost



No other Brick Machine can give you all these advantages. The JACKSON Model A produces up to 28,000 brick per day . . . the Model C up to 14,000 brick per day. Check up on this *low-cost* profit-making machine *now. WRITE FOR BULLETIN J-42 TODAY.*

JACKSON & CHURCH COMPANY
SAGINAW, MICHIGAN, U.S.A.

conserving steel, saving transportation, expediting war jobs

On many types of war construction, concrete is helping meet four pressing requirements:

STEEL IS CONSERVED. Concrete provides rigid, durable, fire resistant construction with minimum use of steel. Many structures, such as floors on ground, need none. Portland cement water paints save lead and zinc.

TRANSPORTATION SAVED. Concrete imposes a minimum burden on transportation facilities, since the bulk of the material is usually found locally.

TIME SAVED. Simple methods, widely available concrete workers and local materials are helping to expedite jobs.

"WHAT IT TAKES" ASSURED. Strength, rigidity, fire safety, economy of first cost and maintenance are inherent with concrete.

Concrete designers, contractors and products men are rendering valuable service by assisting in efforts to use all these advantages to the fullest where concrete is needed.

PORTLAND CEMENT ASSOCIATION
Dept. 10-45, 33 W. Grand Ave., Chicago, Ill.

manufacturing concrete burial vaults which have already had their steel content reduced from 25 lb. to 6 lb. each. Here too, the mix is to be redesigned and methods of vibrating the concrete into place will be changed.

The Badger Concrete Co. regularly manufactures cast stone, concrete masonry units of sand and gravel and Haydite aggregate, air-sealing concrete vaults, concrete sewer pipe up to 60-in. diameter and precast lighting standards. It has always been company policy to have several principal lines of products, to stabilize operations and employment and to guard against adverse economic conditions which might affect certain markets. During the last depression, concrete pipe helped tide the company over when building slumped and there was no market for building units and cast stone.

Edward Olsen is head of the Badger Concrete Co. and E. C. Duwe is sales engineer. The plant and merchandising methods of the company were completely described in ROCK PRODUCTS, December, 1940, pp. 77-79.

New Markets

(Continued from page 79)

companying this article are the kind that brings results.. A manufacturer of concrete milk cooling tanks, for example, must let the farmer know that there is available a substitute for steel tanks. Demonstrations will help to put such a product over.

Markets for Standard Units

The adaptation of standard concrete products to new uses requires foresight and the use of demonstrations, test information and other sales devices to merchandise them. The first thing, of course, is to visualize new uses to which these products can be put that fit into the war picture.

Grain Bin Storage

John L. Strandberg, head of the Concrete Building Units Co., Kansas City, Mo., and president of the National Concrete Masonry Association, developed a flourishing business because storage facilities for wheat were inadequate for this year's bumper crop in Kansas. Something had to be done in a hurry and it was decided to move hundreds of steel grain storage bins into Kansas from Iowa and Illinois.

These bins could not be set directly on the ground and a type of foundation was needed that could be erected in a hurry. Concrete masonry units were selected by the farm authorities because they were readily available, quickly erected, low in cost and are not a critical material—and this isn't all that may come in solving the wheat storage problem by use of concrete products.

Concrete Building Units Co. set out to do a job of selling. All the county agents were contacted and the supply dealers in the counties where the bins had to be erected. The company worked out the freight rates and unit cost of masonry units to the closest point of delivery and sent all this information to the agents in charge.

This work had to be done quickly and all the information was made available by the time the steel bins arrived and, in most cases, soon enough to have the foundation in, ready for the bin. As a result of being awake to opportunity, the company enjoyed a flourishing business in supplying thousands of 8- x 8- x 16-in. units to dealers in small communities, besides the direct sales to agents in charge.

Bomb Shelters, Fences, Etc.

Similar methods of sales approach are effective in getting concrete masonry approved for other emergency construction. War plant fences, bomb and sabotage protective walls, air raid shelters, water storage tanks and tanks for storage of other materials are examples of the kinds of construction thct can go on and to which concrete masonry is particularly adapted. Concrete masonry bomb protection walls are being used extensively in London. The windows of the Houses of Parliament and valuable memorials such as the Royal Artillery Memorial are protected by masonry walls. The illustrations show several designs of protection walls of concrete masonry. A recent issue of the *Indian Concrete Journal* shows photographs of air raid shelters that are made from large sizes of standard concrete pipe. They can be used after the war. Also shown are two types of concrete masonry shelters, for which we have reproduced design details. In the same issue there is described a precast concrete tank that is being used for storing reserve supplies of water, should water mains be damaged during air raids. It is an adaptation of a farm silo and is built of precast staves.

Other uses for standard concrete masonry units, already being developed, are for building basement enclosures for vegetables and for fruit storage, bulk storage bins for grain, feed stuffs, etc., fuel storage tanks, power plant protective walls, etc. One progressive manufacturer recently had on display a series of concrete masonry protective walls and "attic armor" of 2-x8-x16-in. lightweight concrete slabs which are used over attic floors or flat roofs to protect them against incendiary bombs.

These are but a few of the possibilities now being exploited by the wide-awake producers that are on the look-out for war business.

Catch Basin Gratings

(Continued from page 87)

ered direct to the project by contracted trailer trucks. Priorities were extended to deliver the necessary steel without any question on this project.

Precast Mullions

While this contract was being filled, the company was also manufacturing precast concrete mullions for installation in a vital war industry plant under construction. The mullions were made in connection with a glass block installation to be made in the war plant and were cast in sections to form the necessary glass block framing when erected in place. These units were of 5000 p.s.i. compressive strength concrete at 28 days and were vibrated. Electric grinders were the means of smoothing them down before shipment.

On the Navy contract, about 40 manhole covers 3 in. in thickness and 20-in. diameter and the rings were cast by vibration, to replace cast iron covers. Seventeen men were kept busy in the plant making these war specialties.

This concern is alert to the existence of opportunities that are a product of the war. It is true that certain markets have been shut off but new products, to conserve critical materials, are being developed to take their place and emergency markets such as these are being sought, as many must do, to stay in business and keep it profitable. Harold Hemb, who is well known to the Chicago building trade for his pioneering work in concrete joists, is owner of the North Shore Concrete Joist Co.

Concrete Culverts

BARABOO CONCRETE PRODUCTS CO., Baraboo, Wis., has erected a building on the site of the former Chicago and Northwestern roundhouse for the manufacture of concrete block and reinforced concrete culverts. A. L. Brown, Virginia, Minn., who is not a newcomer to the concrete products business, is owner and manager of the company.

DO YOU NEED INFORMATION?

CATALOGS LISTED ON THESE PAGES WILL HELP SOLVE YOUR PROBLEM

To save the time involved in writing individual letters for this new literature, you may obtain them by merely checking and mailing the coupon on the next page.

1 AIR BRAKES.—Wagner Electric Corp. has released a new 28-page bulletin, Form KU-50, illustrating and describing in detail the hydrair, air-hydraulic and straight-air brakes for trucks, tractors, trailers and buses.

2 BALL MILLS.—Hardinge Co., Inc., has published a list of rebuilt ball and pebble mills.

3 BOILERS.—The Babcock & Wilcox Co. has issued a new eight-page booklet describing the integral-furnace boiler, Classes 9, 12, and 15 for capacities as low as 135 hp. or 9000 lb. steam per hr. and for stoker or oil firing. The booklet contains many illustrations and drawings defining details of operation and construction features.

4 BREAKERS. — Roller-Smith Co. new 12-page booklet, Catalog 2150, describes and illustrates Type HD low-voltage air circuit breakers designed for use on alternating current circuits up to 600 volts and direct current circuits of 250 or 750 volts. They are available in sizes ranging from 600 to 6000 amperes a-c, and 600 to 10,000 amperes d.c., and can be furnished in 1, 2, 3, and 4 pole models for either manual or electrical closing.

5 CARRIERS.—Ernst Carrier Sales Co. has issued a new bulletin describing and illustrating drum and barrel carriers.

6 CLASSIFIER.—Denver Equipment Co. has issued Bulletin No. C4A-B, describing and illustrating hydroclassifiers. Data on construction and operation, together with capacities and dimensions, are featured.

7 COPPER.—General Electric Co. has issued a new bulletin GED-1011, showing how copper in war plant electrical systems can be conserved by following certain tested, fundamental steps in making the electrical layouts.

8 CRUSHERS.—Nordberg Mfg. Co.'s new bulletin No. 110 describes and illustrates the Symons cone crusher. Clear action pictures show the material passing through the cavity in a series of steps until the required size is obtained.

9 DIESELS.—Caterpillar Tractor Co. has released a new 32-page book entitled "Caterpillar Diesel—on Guard" (Form 7283) that gives a graphic picture of the part diesel tractors, motor graders and engines are playing in building airports and military roads.

10 DIESELS.—General Electric Co. has brought out Bulletin GEA-3598 describing and illustrating the 65-ton Diesel locomotive which has been standardized and is now built in quantities for stock. It can be used for any switching service now handled by a steam locomotive of comparable size.

11 DRILLS.—Keystone Driller Co. has issued five new bulletins describing and illustrating Model 51 crawler mounted blast hole drills (Bulletin BD-1141), Model 50 water well machines, Model 80 deep well spudders, Model 60 medium sized spudder and Model 74 cleanout machines.

12 DRYERS.—Hardinge Co., Inc., has released Bulletin No. 16-C fully describing and illustrating Ruggles-Coles Class XA, XF, XE, XH, XL and XW dryers.

13 DRYERS. — McNally Pittsburgh Mfg. Corp. new bulletin No. 242 describes and illustrates heat dryers.

14 DUST COLLECTORS.—Buell Engineering Co., Inc., has published a new book entitled "The Buell van Tongeren System of Industrial Dust Recovery" which gives facts and data of interest and value to every engineer concerned with dust control. It also describes and illustrates the many uses for this equipment.

15 ELECTRONIC TUBES.—General Electric Co. has issued a chart, No. 162-1-8850, giving a comprehensive list of electronic tubes for industrial use. The chart contains technical data on each tube. Bulletin numbers for each tube also are listed. These bulletins contain valuable installation, operating, and technical data.

16 FEEDER CONTROL. — Mosher Automatic Control Systems has issued a bulletin on an automatic control for mechanical feeders on pulverizing machines which can step up output from 20 to 35 percent above usual operating capacity.

17 FIRE BRICK.—General Refractories Co. has issued a complete list of all the refractory products available today. It contains information on fireclay brick, high alumina brick, silica brick, magnesite brick, to name only a few. Tables useful in figuring proper number and combinations of brick in fire brick construction.

18 FIRE BRICK.—Mexico Refractories Co. has published an attractive 24-page hinged book describing and illustrating fire brick for gas, oil, coal, wood and refuse fired boiler furnaces. Pictures of actual installations are also shown.

19 HOPPERS.—Butler Bin Co. has issued Bulletin 220 describing and illustrating portable concrete hoppers which can be towed to the job behind the first truck mixer or a light car.

20 JACKBITS.—Ingersoll-Rand Co.'s new 24-page bulletin, Form 2780, contains more than fifty illustrations, a table showing the types of jackbits recommended for different kinds of work, and various cost data.

21 MAGNETS. — Stearns Magnetic Mfg. Co. new eight-page bulletin No. 25-C describes the design, construction and material embodied in suspended separation magnets. It also illustrates their profitable application and contains specifications on circular and rectangular types.

22 MIXERS.—Chain Belt Co. has published Bulletin No. 405 describing and illustrating the mechanical features of the REX mixers and agitators and gives complete specifications and operating data.

23 PULLEYS.—The American Pulley Co. has released Bulletin CP-42 describing and illustrating the new tight-end Type "N" conveyor pulley. The folder contains complete data needed to specify conveyor pulleys in either crown or straight face construction. Types of pulley construction and lagging, sizes, list prices are included.

24 PUMPS.—Worthington Pump and Machinery Corp. Bulletin W-312-B2C contains specifications, cross-section illustrations and table of dimensions of the Type L single-stage volute pumps Nos. 3 to 6 with capacities to 2000 g.p.m. and heads to 300 ft.

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PERMIT NO. 1417
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CHICAGO, ILL.

BUSINESS REPLY CARD

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FILL IN COUPON BELOW—

Check off the reference numbers to the new literature on post card. Give your name, company, and address. No stamp is required.

USE POST CARD

25 PYROMETERS.—The Bristol Co. has published a new bulletin, No. P-1102, describing and illustrating radiation pyrometers. Theory of operation and information regarding the use of radiation pyrometers, and engineering drawings showing methods of use are also included.

26 RUBBER.—The B. F. Goodrich Co. has issued a very interesting rubber guide book for American war industries, No. 2-8981-GA, containing information on Ameripol and listing the application and properties of many types of products for industrial and aeronautical purposes using natural, synthetic or reclaimed rubber.

27 SAFETY CLOTHING.—American Optical Co. has issued a catalog illustrating and describing welders' safety clothing. It also contains information on the type of protective clothing the welder needs on any particular job. A section of the catalog is devoted to hints on how to break in the safety clothing to get maximum service and wear.

28 SCALES.—Toledo Scale Co. has issued a new four-page leaflet describing and illustrating floor scale installations. Cut-out sketches of structural features are also shown.

29 SCRAPERS.—R. G. LeTourneau, Inc., equipment catalog, Form A-276, contains descriptions and illustrations of various models of carryall scrapers, tournapulls, bulldozers, angledozers, rooters, tournacranes, etc. Specifications for this equipment are also given.

30 SCREENS.—Robins Conveying Belt Co. new bulletin No. 122 describes and illustrates Style M and Style J vibrex vibrating screens. Construction features also are shown in the bulletin.

31 SCREENS.—Universal Vibrating Screen Co. new 32-page catalog No. 107 fully describes and illustrates various types of vibrating screens.

32 SEPARATOR.—Stearns Magnetic Manufacturing Co. brought out new 12-page Bulletin 701 which illustrates and describes Type K gravity induction separators, particularly suited for treating materials of highly reluctant magnetic values.

33 SPEED CHANGER. — Allis-Chalmers Mfg. Co. Bulletin B6013A graphically illustrates the Vari-Pitch speed changer. Diagrams, operating data and selection tables offer facts on units in sizes handling from 1½ to 75-hp. Speed variations are readily available in a range of 375 percent. Instant adjustment is possible either manually or with a pilot motor. Photographs of the newest applications are used in great number in the bulletin.

34 SPEED CONTROL.—Reeves Pulley Co. has issued a 16-page booklet, "More Output for Defense" (No. G-423) which illustrates and describes numerous uses and applications for variable speed control equipment in defense industries and plants on many different types of machines.

35 TEMPERATURE CONTROLLERS.—Wheelco Instruments Co. new 16-page bulletin Z6000 is a condensed listing of their complete line of measuring and control instruments. It describes and illustrates unit construction of temperature controllers. Remote controllers, combustion safeguard equipment, etc., are also covered. Prices and numbers of catalog sections are shown.

36 TIRES.—The B. F. Goodrich Co. has published an "Operator's Handbook" No. I-8768-TT, containing information about tires and tubes for trucks, buses, trailers, and earth moving equipment, consisting of construction features, data, charts, operating and service helps, etc.

37 TOOLS.—Templeton, Kenly & Co. Bulletin P&P-41, just issued, brings up to date application data which has been gathered on the Util-A-Tool. This handy tool consists of nine pieces of equipment used in various combinations to perform various jobs. Packed in locking, metal carrying case. How the tool pulls in, pushes apart, clamps, tensions, bends conduit, beams, etc. and easily performs other labor and time consuming jobs is pictured. Specifications and prices are also given.

38 TURBINES.—Moore Steam Turbine Division of Worthington Pump and Machinery Corp. has published Bulletin 1951 containing information and a sectional diagram of Types GA and GB single-stage turbine with combined reduction gear, and Bulletin 1955 containing information and a sectional diagram of Type S multi-stage steam turbines.

39 VALVES.—Everlasting Valve Co. has issued a new 32-page bulletin, No. E-100, describing its quick-operating valves for blow-off, water columns and other boiler room services. The bulletin is profusely illustrated with large, self-explanatory views which clearly show the design and construction of the various types.

40 VALVE CONTROL.—The Foxboro Co. Bulletin A-276 describes and illustrates the newly designed remote valve control unit which is equally useful in setting control points of distant instruments or the adjustment of positioning or pressure-producing pistons located in inaccessible points. It is practical for operation over distances as great as 1000 ft.

41 VIBRATION INSULATORS.—The B. F. Goodrich Co. has issued information on the problem of isolating vibration in machines in a new 12-page catalog section on Vibro-Insulators. The first two pages are filled with a general discussion of the vibration insulation problem and the part that rubber is playing in its solution. Methods of selecting the proper Vibro-Insulator mounting are also given.

42 VIBRATORS.—Mall Tool Co. has issued a four-page folder descriptive of concrete vibrators having 4000, 6000, 7000 and 8000 vibration frequencies per minute.

43 WELDING. — International Acetylene Association has prepared a new book, entitled "Training Oxy-Acetylene Welding and Cutting Operators—Instructors Outlines" to assist instructors in planning courses.

44 WELDER.—The Lincoln Electric Co. has issued a new bulletin, No. 412, on a welder with a self-indicating dual continuous control.

45 WHEELS.—French & Hecht, Inc., has issued List No. 3 giving descriptions and illustrations of pneumatic, semi-pneumatic and solid rubber tired industrial and wheelbarrow wheels.

46 WHEELS AND ROLLERS.—American Manganese Steel Division of the American Brake Shoe & Foundry Co. has released a 24-page bulletin, No. 842-WS, describing and illustrating wheels, rollers, sheaves, gears and idlers, also a 4-page bulletin, No. 742-W, on welding rods and electrodes.

47 WIRE ROPE.—MacWhyte Co. has issued a new bulletin No. 42-12 entitled "Ropeology" which contains a collection of wire rope users' experiences plus the science of wire rope application.

Detach and Send Us This Post Card ↓

(10-42)

ROCK PRODUCTS, 309 W. Jackson Blvd., Chicago, Ill.

I would like to have the items circled.

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
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46	47							

Name ..... (Position) .....

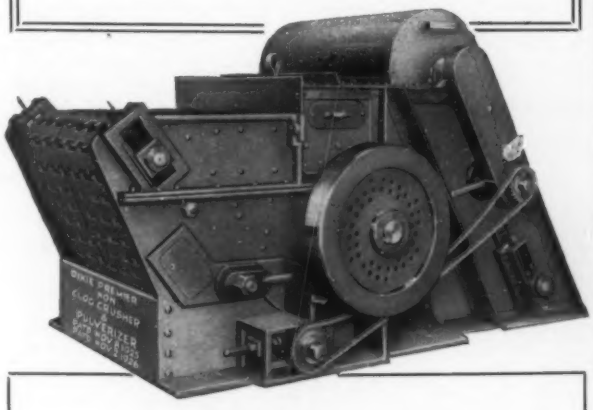
Company .....

Street .....

City & State .....

WHEN PRODUCTION CANNOT LAG

DIXIE GETS THE CALL!



DIXIE

Non-Clog

HAMMERMILLS

NOTE THESE TYPICAL TOUGH JOBS LICKED BY DIXIES

1. Replaced four crushers for high moisture content bauxite . . . cut power in half . . . reduced drying costs . . . increased production.
2. Efficiently crushing clay balls to reclaim phosphate in Florida phosphate plants.
3. Crushing phosphate muck in T.V.A. Tennessee plant.

HERE'S WHY . . .

The Dixie Non-Clog Hammermill is the only crusher with a moving breaker plate. Provides positive mechanical feed. No manual pushing of material needed. Even the most plastic, wet, clayey material will not slow production or clog hammers. This feature alone has saved the cost of 10 men in one company!

And because the Dixie moving breaker plate can be moved forward or backward from the hammer points, quality and size of production can be controlled. This feature provides additional assurance against clogging. These are but two of Dixie's outstanding features. Send coupon below for free booklet, "More Efficient Crushing of Raw Materials" which gives complete facts.

DIXIE MACHINERY MFG. CO.

4202 Goodfellow Blvd., St. Louis, Mo.

GET THE FACTS!

Dixie Machinery Mfg. Co.,
4202 Goodfellow Blvd., St. Louis, Mo.

Please send free booklet on Dixie Non-Clog Hammermills. We want to crush.....

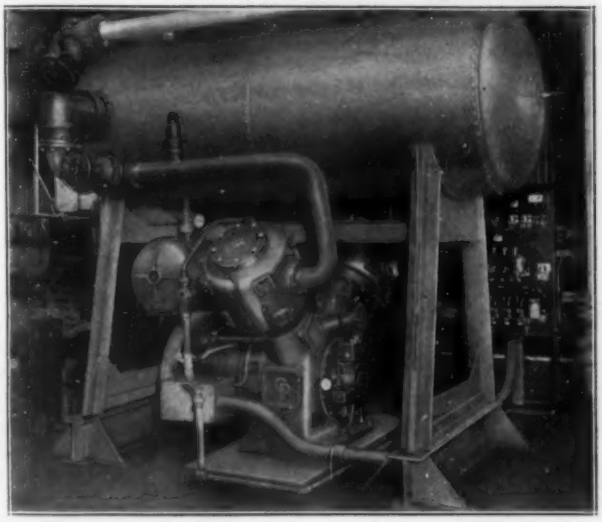
Name .....

Company .....

Address .....

City .....State .....

150 H.P. CP AIR COMPRESSOR



With Motor...

Only 7' 8" x 5' 0"

Solves Problem of Limited Space

A southern manufacturer had a CP horizontal O-CE air compressor. Production called for more air but floor space was limited. A CP Type Y two-stage, double-acting 150 h.p. compressor gave the needed 900 cfm. Shipped intact, the CP "Y" was quickly installed and required a space only 7' 8" long, 5' 0" wide and 5' 5" high, including built-in motor.

CP Type Y Compressors are available in capacities of 501 to 900 cfm for 100-125 lbs. discharge pressure, with built-in electric motor, coupled motor or other prime mover, or belt wheel. Sizes for other pressures also available. Bulletin No. 766 gladly sent on request.

CHICAGO PNEUMATIC TOOL COMPANY

General Offices: 8 E. 44th St., New York, N. Y.

CHICAGO CP PNEUMATIC

AIR COMPRESSORS

ALSO: Pneumatic Tools, Electric Tools, Rock Drills, Hydraulic Aviation Accessories, Diesel Engines

Gravel Land Option

J. D. WADE, Shreveport, La., has taken 13 options for the purchase of gravel on more than 900 acres of land in northeast Harrison county, Texas. It is said that the term is for two years, and Mr. Wade has agreed to pay a price ranging from 5 to 9c per cu. yd.

Graphite Plant

ALABAMA FLAKE GRAPHITE CO., has started construction of a new graphite plant near Ashland, Ala. H. G. Fleming is in charge of construction.

Mica Business

SANDY RIDGE MICA AND MINING CO., has opened offices at 606 Reynolds Bldg., Winston-Salem, N. C., with William Swanson in charge. The company was recently started to deal in and produce mica. The mines are located in Stokes county and the principal operations at present are some three or four miles from Lawsonville. The mica house, where the sheet mica will be cut and graded, is located in Walnut Cove, between the N. & W. and the Atlantic & Yadkin railways, in a building owned by L. MacRae.

North Carolina Activity In Mica

SECRETARY OF STATE of North Carolina recently granted certificates of incorporation to three Asheville residents for the establishment of 11 mining companies in western North Carolina "to mine or otherwise extract or remove mica, feldspar, and any and all minerals, ores and mineral substances found on lands belonging to, leased or otherwise controlled by the companies.

George A. Shuford, Jane M. Luther and Tom Sawyer were the Asheville residents who secured the certificates, each of which granted an authorized capital stock of $10,000 and a subscribed stock of $300 for each company.

All 11 companies will have headquarters in Biltmore. They are the Lincoln, Beasley, Mauldin, Atwater, Jasper, Wray, Lackey, Leatherman, Reynolds, Brooks and Thurman mining companies.

North Carolina has been requested by the W.P.B. to increase its output three-fold, which is over 3,000,000 pounds of sheet and punch mica annually. W.P.B. has selected the Colonial Mica Corp., New York, to direct the mining of mica in the Southwest and that the company has established headquarters in Asheville.

Supply Raw Materials

RIVERSIDE CEMENT CO., Riverside, Calif., is reported to be preparing its Oro Grande plant to get out raw material to be shipped to Riverside for processing. The plant has not been operated since 1928. Much of the machinery was moved to Riverside.

New Quarry

E. C. SCHROEDER & CO., McGregor, Ia., is opening a quarry 3½ miles west of Kingston, Okla., to furnish rip-rap for the Frisco railroad.

Speed PLUS Accuracy

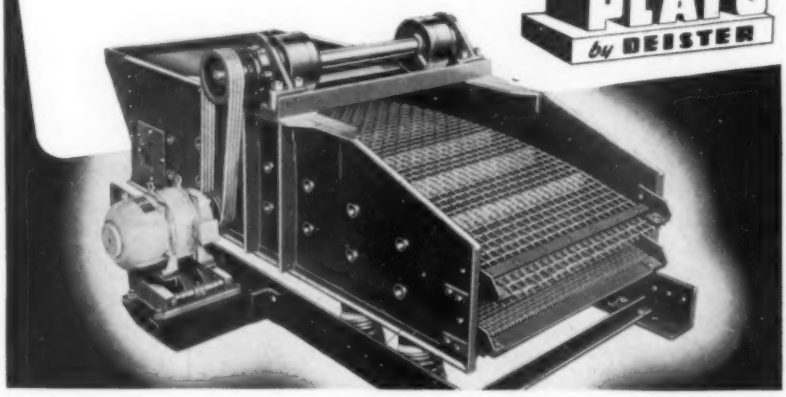
PLAT-O Vibrating Screens assure *balanced production* . . . highest speeds to meet your emergency needs, *plus* the accuracy so essential to efficient production . . . greater profits.

You can put more aggregate per hour over a PLAT-O Screen because PLAT-O's powerful, positive high speed . . . its opposed elliptical throw immediately stratifies the load . . . the undersize passes through the screen surface quickly without blinding . . . oversize bounces off the far end . . . fast.

Simple design, rugged, all-welded construction with only two bearings and fully cushioned vibration is your assurance that you can depend on PLAT-O to uphold the toughest schedules through a three-shift, 7-day week for the duration . . . without fear of costly time out for repairs. There's a complete range of sizes from 2½ x 4 feet to 5 x 10 feet, one to four decks. Most sizes are available for prompt delivery.

DEISTER MACHINE COMPANY
Fort Wayne, Indiana

PLAT-O by DEISTER



Jeffrey

CHAINS	FEEDERS	PULVERIZERS	SHREDDERS
CONVEYORS	GRINDERS	PULLEYS	SPROCKETS
CAR PULLERS	IDLERS (Belt)	MONO-VEYORS	TAKE-UPS
CRUSHERS	GEARS	SCREENS	WAYTROLS
ELEVATORS	PORTABLES	TRANSMISSION	MACHINERY

Jeffrey equipment and plant engineering cover the entire stone products industry . . . sand and gravel, crushed stone and cement. Equipment provides long service and maximum economy. Our rich experience is at your disposal.

THE JEFFREY MANUFACTURING COMPANY

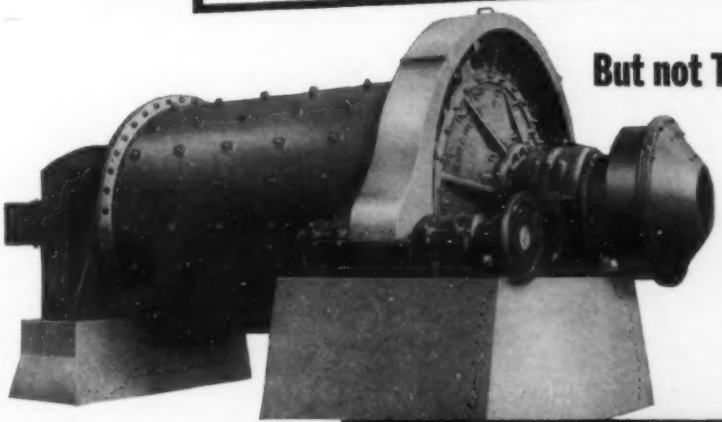
935-99 North Fourth Street

COLUMBUS, OHIO

Baltimore, Birmingham, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Denver, Detroit, Harlan, Huntington, Houston, Milwaukee, Pittsburgh, Philadelphia, New York, Scranton, Salt Lake City, St. Louis

Jeffrey bucket elevator (heavy duty type) and belt conveyor are shown at left. They are handling crushed stone in a large quarry operation. Jeffrey units will speed up schedules—will soon pay for themselves.

TOUGH SPECIFICATIONS



But not TOO tough for a MARCY Rod Mill

The U. S. Reclamation Bureau laid down exacting specification for the processed sand to be used in the Central Valley Project of the Sacramento River. Test grinds were approved and an 8' x 12' MARCY Open End Rod Mill was purchased by Columbian Construction Co. and installed at Shasta Dam. This Mill is doing the job satisfactorily—another example of the widening field of Marcy Mills, long well-known in ore milling.

●When writing, state your reduction problem.

MARCY Ball, Rod & Tube Mills are built in types and sizes to meet ANY requirements.

DENVER
SALT LAKE CITY
EL PASO
SAN FRANCISCO
NEW YORK CITY

The Mine & Smelter Supply Co.

CANADIAN VICKERS, LTD. *Montreal*
W. R. JUDSON *Santiago, Lima*

Adds Equipment

CERTIFIED CONCRETE, INC., East Chicago, Ind., according to J. T. Gaither, president, recently added 6 new Rex 4-cu. yd. truck mixers to its fleet. Large demands are being made on the company because of the expansion of war industries in the vicinity.

Stone Quarry

A CRUSHED STONE PLANT with a capacity of 75 carloads in 24 hr. is being built near Pringle, S. D., to furnish stone for a war construction project.

To Develop Mica Deposits in New Hampshire

A MEETING was held at Newport, N. H., August 25 to create more interest in developing mica deposits. Dr. Fred Engelhardt, president of New Hampshire University and chairman of the State Planning and Development Commission, was the principal speaker at the meeting, held at the New England headquarters of the Colonial Mica Corp. Other officials attending were Edward Ellingwood, state industrial agent; Roscoe Whitney, New England manager of Colonial Mica; Raymond B. Ladoo, production executive of Colonial Mica and chief of the mica branch of the War Production Board, and Stanley A. Spiller, secretary of the Dartmouth-Lake Sunapee Region.

WHITE MOUNTAIN MICA CO. is the self-styled partnership of three patriots at Thornton, N. H., who have started mining mica—a critical war necessity. The three men are H. Leslie Smith, a former school teacher; Percy Leggett and Harold V. Verrow.

DON'T DELAY WASHING OPERATIONS

Specify *Eagle* Interchangeable Repair Parts

In designing Eagle Washers, our Engineers considered the hard wear that Eagle Washers must withstand . . . and made sure that all parts used were the *best*.

That is why Timken Roller Thrust Bearings are used in the housing, at upper end of tub, which takes all the end thrust of a screw shaft.

. . . why all Flights are made from a special iron and the metal is deeply chilled to insure long wear.

. . . why bronze sleeves are pressed on lower end of shaft, to eliminate rust accumulation and prolong shaft life.

. . . why all Drive Gears and pinions are steel, cut on precision machines, to insure easy running and full power transmission.

Our Engineers are *ready* and *waiting* to assist *you* at all times.

Our Service Department is anxious to furnish you with genuine Eagle Repair Parts and we will give you as prompt delivery as possible.

Eagle Products include Spiral Screw Washers, Paddle Type Log Washers, Sand Tanks, Sand Drags, Sand Dewaterers, Shale Removers, Sand and Gravel Crushers, Swintek Screen Nozzle Ladders.

EAGLE IRON WORKS

☆ DES MOINES, IOWA ☆

Change of Owners for Crushed Stone Plant

ELLISON ROAD CONSTRUCTION CO., Carthage, Ill., has purchased the quarry and crushed stone business near Garnett, Kan., started in 1870 by L. W. Lewis, and operated since 1912 as L. W. Lewis Sons, Inc. Charles R. Dunn is superintendent. The company has a large contract for runways on a nearby Army airfield. Three new power shovels, a number of trucks and a portable crushing plant are being added to the operation.

Ready Mix

ACME READY MIXED CONCRETE CO., Rockford, Ill., a new concern capitalized for $50,000, has a new plant consisting of a 3-compartment Johnson bin and a 3-cu. yd. weigh batcher. The delivery fleet consists of two Smith transit mixers and three Jaegers, all of 3-cu. yd. capacity. Ralph E. Johnson is president and manager; Harvey Martin, vice-president; and Charles Joyce, secretary-treasurer.

Sand-Lime Brick Production and Shipments

Seven active sand-lime block and brick plants reported for August and seven for July, statistics for which were published in September.

AVERAGE PRICE FOR AUGUST

	Plant Price	Delivered Price
Detroit, Mich.	....	$16.00
Sebewaing, Mich.	$11.50	....
Saginaw, Mich.	13.00	....
Grand Rapids, Mich.	....	15.00
Seattle, Wash.	16.50	18.50
St. Louis, Mo.	....	....
Watertown, Mass.	12.50	13.50

STATISTICS FOR JULY AND AUGUST

	*July	†August
Production	2,172,377	2,345,000
Shipments (rail)	....	650,000
Shipments (truck)	2,117,362	1,481,070
Stock on Hand	1,094,596	957,474
Unfilled Orders	625,000	850,000

*Seven plants reporting: incomplete, three not reporting stock on hand and three not reporting unfilled orders.

†Seven plants reporting: incomplete, two not reporting stock on hand and three not reporting unfilled orders.

6 REASONS WHY MINING ENGINEERS *Specify* NAYLOR PIPE

1 — IT'S LIGHT IN WEIGHT
2 — IT SAVES STEEL
3 — IT'S EASY TO INSTALL
4 — IT'S LEAK-TIGHT
5 — IT ABSORBS VIBRATION
6 — IT SAVES MONEY

Sizes from 4" to 30" in diameter with all types of fittings, connections and fabrication. Write for Naylor Catalog.

NAYLOR PIPE COMPANY
1237 EAST NINETY-SECOND STREET
CHICAGO, ILLINOIS

NAYLOR LOCKSEAM SPIRALWELD **PIPE**

S-P-E-E-D-I-N-G the Groundwork for VICTORY!

We're in this fight 100%—at many American outposts . . . and right here at home—speeding the groundwork for Victory.

Page AUTOMATIC Dragline Buckets are speeding the construction of air fields and bases, fortifications, cantonments . . . yes, and speeding the mining of coal to produce power for the machines turning out planes and tanks and guns.

Why are Page AUTOMATIC Buckets FASTER? Because they are the ONLY dragline buckets built which AUTOMATICALLY land in digging position using ALL their weight to DIG-RIGHT-IN AT ANY DEPTH. That's why Page AUTOMATIC Dragline Buckets have the reputation of outdigging other buckets of equal size and weight.

That's why they're playing such an important part in "Speeding the Groundwork for VICTORY!"

PAGE ENGINEERING COMPANY
Chicago, Illinois

PAGE *Automatic* DRAGLINE BUCKETS

Cement Regulations

(Continued from page 62)

routine handling shall be allowed to any war procurement agency within which to avail itself of the cash discount.

Mill Base Prices

(b) **Maxamum prices for cement sold by a manufacturer and shipper outside its normal market area.** (1) The maximum prices for American Society for Testing Materials Types 1 and 2 portland cement sold by a manufacturer and shipped outside its normal market area shall be, except as provided in subparagraph (2) below, the higher of the following two prices:

(i) A price at the destination not in excess of the maximum price established under paragraph (a) of this section for a sale at such destination by a mill whose normal market area includes such destination.

(ii) A price f.o.b. mill in bulk not in excess of the price listed below in the Bureau of Mines District in which the mill is located.

District No.:	Price per barrel
1 (Eastern Pa., N. J., Md., Dela.)	$1.33
2 (N. Y., Conn., R. I., Mass., N. H., Vt., Maine)	1.36
3 (Western Pa., West Va.)	1.27
4 (Michigan)	1.28
5 (Ind., Ill., Wis., Ky.)	1.42
6 (Ga., Ala., Tenn., La., Miss., N. C., S. C., Va., Fla.)	1.44
7 (Eastern Mo., Iowa, Minn., N. D., S. D.)	1.54
8 (Neb., Kans., Okla., West Mo., Ark.)	1.43
9 (Texas)	1.58
10 (Colo., Utah, Mont., Wyo., N. M.)	1.73
11 (California)	1.43
12 (Oregon, Washington)	1.81

A delivered price may be charged under this provision equal to the f.o.b. mill price plus the freight charges incurred by the manufacturer in making delivery to the point of destination.

(2) A manufacturer may use the alternative pricing method set forth in paragraph (b) above only if (i) the manufacturer indicates on the billing that the price has been determined in accordance with 1346.104 (b) (2) of this Maximum Price Regulation No. 224; and (ii) the cement is to be sold to a person who will not resell it in the course of trade to a person other than a war procurement agency or a contractor or subcontractor with any war procurement agency for use on a project controlled by any such agency: **Provided,** That the obligations of a manufacturer under this provision will be met if he secures an affidavit from the purchaser that the cement to be purchased will not be resold in the normal course of trade to a person other than a war procurement agency or a contractor or subcontractor with any war procurement agency for use on a project controlled by any such agency, and the manufacturer retains such affidavit in his possession for a period of two years and makes it available for inspection by the OPA.

(3) The maximum prices established under this paragraph (b) are subject to the trade discounts, quantity differentials, charges (including package charges), allowances, and deposits (other than deposits on cloth bags which may be required in a reasonable amount so long as the refund equals the deposit) most favorable to purchasers which the manufacturer had in effect, published, listed, or quoted, during the period March 1 to 15, 1942.

(4) The maximum prices under this paragraph (b) may be increased to the extent that a cash discount is offered to purchasers under conditions as favorable as were offered by the seller during the period March 1 to 15, 1942: **Provided,** That during the period of the war emergency a reasonable period of grace sufficient to permit routine handling shall be allowed to any war procurement agency within which to avail itself of the cash discount.

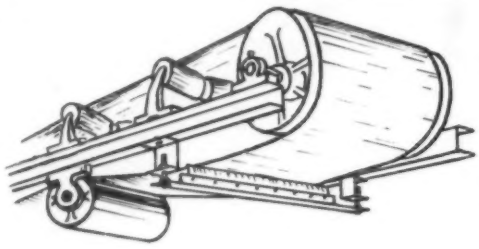
(5) The differentials from the price of American Society for Testing Materials Types 1 and 2 portland cement which prevailed on March 15, 1942, with respect to American Society for Testing Materials Type 3 portland cement (high early strength cement), white cement, oil-well cements, masonry cement, and other cement, shall be added to or subtracted from, as the case may be, the maximum selling prices established under this paragraph for American Society for Testing Materials Types 1 and 2 portland cement, to determine the maximum prices for such other cements.

1346.105. **Maximum prices for sales and deliveries of cement by dealers.** The maximum prices for sales and deliveries of cement by dealers shall be prices established in accordance with the provisions of 1499.2 and 1499.3 of the GMPR, except that:

(a) The maximum price for the sale by a dealer of cement purchased from a manufacturer who established maximum prices in accordance with the provisions of 1346.104 (b) (2) of this regulation for the cement which the dealer is reselling shall be a price not in excess of the cost of such cement to the dealer plus a dollar margin not higher than the dollar margin which the dealer customarily received in a similar transaction involving like quantities and types of cement between Oct. 1, 1941, and March 31, 1942.

(b) If by reason of freight rate increases occurring after March 17, 1942, the delivered cost to the dealer of the cement he is reselling is in excess of the delivered cost of the cement which he delivered or offered for delivery to establish his maximum price under this paragraph, the dealer may add to his price a

(Continued on page 112)



Design Idea

This scraper device has proved worthwhile for cleaning sticky material from cover of belt before riding over return idlers and snubber pulleys. Installed behind the head pulley, the weight of the belt does the scraping. A piece of T or L iron with a strip of old belting makes a good scraper. It should be attached diagonally to the direction of travel, with screw takeups to permit adjustment.

Your

BELTING IS HARD TO REPLACE–MAKE IT LAST

FUNDAMENTAL CARE

Cuts and Tears in belt covers should be seen quickly and carefully repaired at once. Any opening in the "skin" permits the entrance of grit and moisture which can travel back thru the belt and seriously weaken it. Repairs may be hot or cold.

Badly ripped belts, even tho cut all the way thru, may be repaired with metal fasteners. The edges of the cut should be sealed first with cold patch cement.

Examine fasteners occasionally. If belt becomes frayed at the ends, reset the fasteners. Some belts have been torn from end to end because of fasteners that loosened and snagged.

. . . Another way to conserve rubber belting is to buy Goodall Brands—Built to Last Longer.

PHILADELPHIA NEW YORK BOSTON
TRENTON PITTSBURGH CHICAGO
GOODALL RUBBER CO. OF CALIFORNIA
GOODALL RUBBER CO. OF TEXAS

GOODALL KNOWS SYNTHETICS

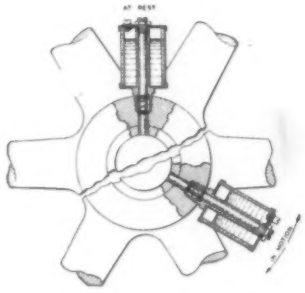
Ever since Synthetic Rubber was commercially introduced, Goodall has been a foremost compounder of this man-made rubber. Today, we are "batching" five of the basic synthetic rubbers for everyday production runs in our factory. When new synthetic and plastic substitutes become available, Goodall-Whitehead chemists and technicians are ready with the precise formulas, timing and control techniques so necessary for safe, dependable products.

Mill: Trenton, N. J. (Est. 1870)—72 Years of "Know-How", Our Most Valuable Commodity.

GOODALL
RUBBER COMPANY, INCORPORATED

Pulley Lubricator

OIL-RITE CORPORATION, Milwaukee, Wis., has developed a wick-type oiler for use on loose pulleys, idler pulleys, clutches, eccentrics, and similar rotating machine parts. It is designed to deliver a constant, positive, and regulated amount of filtered oil to shaft or bearing while pulley is in operation. The reserve supply of oil is always visible.



Showing pulley oiler at rest (top) and in operation (right)

It consists of a simple glass oil reservoir, mounted on a hollow metal stem. This stem is sealed from the oil in the reservoir, except for two small ports at the very top. Inside the stem is a cylindrical felt wick, which extends through the pulley hub to rest directly on the shaft. A compression spring is wrapped around the wick to hold it firmly in position against the shaft.

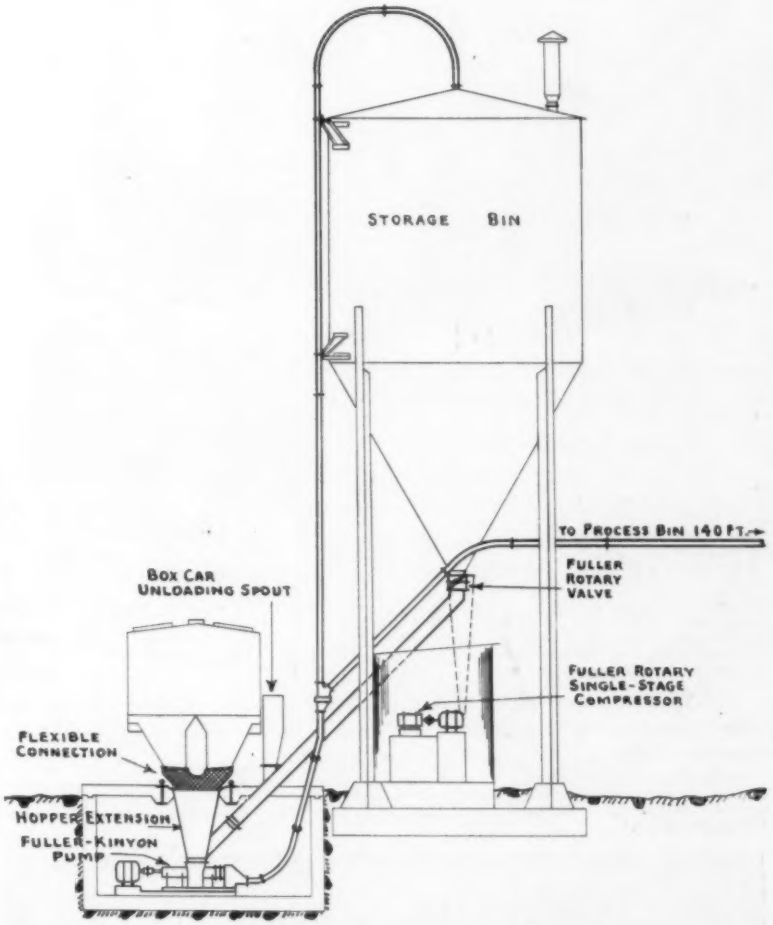
As the pulley rotates, and the lubricator with it, centrifugal force throws the oil against the top of the reservoir, and into the two ports in the stem. These admit oil to the wick, which filters out all dirt and sediment, and conducts the oil directly to the face of the shaft. Oil flow through the wick is said to result partly from capillary attraction, partly from the suction caused by the drag of the wick on the shaft.

Handling Cement from Box Cars

FULLER CO., Catasauqua, Penn., has designed several installations for unloading and handling both box cars and special hopper-bottom cars. The hopper-bottom cars originally intended for handling portland cement are now in such great demand for war materials that the concrete products or ready-mixed concrete manufacturer is lucky to get his bulk cement even in box cars.

The particular installation shown herewith is for handling asphalt filler, but the same design has many applications. When unloading hopper cars the regular installation is used. When unloading box cars either a permanently attached spout or a portable one is provided, so that the cement may be shoveled or plowed into it through the car door. This spout discharges to a reclaiming spout from the storage tank to the Fuller-Kinyon pump under the track.

The discharge from the tank is provided so that one and the same pump may be used to fill the tank, or to withdraw material from the tank and pump it to a processing plant. A Fuller rotary air compressor, housed under the bin supplies the compressed air.



Layout of equipment for pumping bulk cement or other fine material from either hopper-bottom or box cars

Belting Construction Changes Due to War

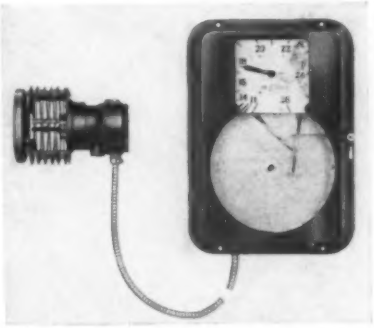
QUAKER RUBBER CORPORATION, Philadelphia, Penn., explains in an article by B. J. Flynn, manager of the Belting Division, in *Quaker Flashes* that certain changes in belting are required to conserve rubber. These changes involve principally a simplification of its line. However, four principal brands will be continued in stock. The Hitensl brand of square edge, friction surface transmission belt, constructed of specially woven silver duck, with rubber friction and skim between the plies, is designed to handle tough transmission rubber

belt uses. The Redskin brand of red friction surface, folded edge transmission belt, made on 32-ounce soft woven duck, with rubber friction and skim between the plies, will meet most transmission belt problems except where the square edge belting should be used. The Quaker brand of rubber covered conveyor and elevator belt, made either of 28 or heavier ducks, and supplied with high grade friction between the plies and a high tensile strength ruber cover stock, top and bottom, is a belt designed to answer the toughest conveyor requirements. The Hercules grade, having a very good tensile strength rubber cover stock, is believed to be satisfactory for the ordinary conveyor job.

Radiation Pyrometer

THE BRISTOL CO., Waterbury, Conn., has designed a radiation pyrometer, known as the Pyrovac, for recording, indicating or automatically controlling temperatures above 900 deg. F. in kilns and furnaces. The temperature-sensitive unit or radiation head is mounted on the outside of the kiln or furnace out of the hot zone where it picks up heat rays emitted from the object under measurement, thus registering its surface temperature.

This pyrometer is intended for use in measuring and automatically controlling temperatures that fall into the following classifications: high



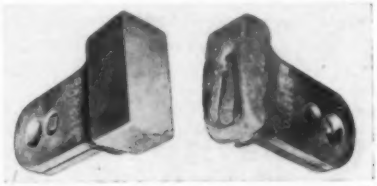
Radiation pyrometer to automatically control temperatures

temperatures out of the range of the thermocouple; temperatures for which rare-metal thermocouples are used; surface temperatures, such as roof, wall, duct, lining, or retort temperatures and the temperature of the work itself rather than furnace or kiln temperature surrounding the work; and where object is moving, is inaccessible, or limited by space.

Three-Part Pulverizer Hammer

AMERICAN MANGANESE STEEL DIVISION, The American Brake Shoe & Foundry Co., Chicago Heights, Ill., has brought out the Clark renewable tip pulverizer hammer to conserve metal.

The hammer consists of a weighted manganese steel head connected to the rotor by two matching arms or bars of manganese steel. On the



Left, worn renewable tip pulverizer hammer; right, hammer as it is made

lower end of each bar are hooks which engage internal pockets in the head. The bars are bolted together under the eye so that they form a one-piece arm, but they may be

RUGGED and DEPENDABLE HEAVY-DUTY TRUCKS from SMALLER UNITS

... and Uncle Sam Approves!

YOU NEED BIG-CAPACITY, HUSKY TRUCKS for today's jobs . . . but you can't buy standard equipment of this type now.

QUITE A PROBLEM? NO!

For years successful operators with tough, difficult, heavy-duty, on or off-the-highway hauling problems have saved time, money, men and material with

THORNTON Four-Rear-Wheel DRIVE

From coast to coast in the U. S. A. and in countries all over the world, 1½ to 3-ton trucks have been converted with THORNTON units into DURABLE, FLEXIBLE, HEAVY DUTY VEHICLES that out-pull, out-last and out-maneuver standard trucks costing double or more.

Put TWO driving axles under the load instead of one, double the gear speeds, better springing and load flotation, with vastly superior tractive ability . . . all of this for less money!

Government approval? Yes, up to now. But these things are subject to change . . . so act quickly. Contact your nearest Truckstell-THORNTON dealer, or wire factory direct. Trained men will engineer this equipment to the requirements of YOUR PARTICULAR JOB.

THORNTON TANDEM CO.
8719-8779 GRINNELL AVE. DETROIT, MICH.
Manufacturers also of the THORNTON automatic-locking DIFFERENTIAL
"When you need TRACTION you need THORNTON"

TODAY

demands the Efficiency of

GAYCO

Inefficient and expensive SEPARATION can become a costly bottleneck in your production schedules! Today demands the increased *production*, the greater UNIFORMITY, wide range and the low costs that the GAYCO Separator will bring to your processing. The Gayco actually gives 25% to 30% greater recovery of fines; clean tailings; range from 60 to 400 mesh. GAYCO Engineers are ready now to show you how *it can be done.* Just check and send the Coupon—or write a letter.

The GAYCO Separator Handles

Abrasives	Emery	Plaster of Paris
Apatite	Feldspar	Plastics
Alum	Fullers Earth	Quartz
Bone Black	Fluor Spar	Soda Ash
Bauxite	Gypsum	Sienna
Barytes	Graphite	Silica
Borate Ore	Garnet	Sulphur
Borax	Iron Oxides	Shale
Bakelite	Kaolin	Slate
Bone Ash	Kieselguhr	Sugar
Coal Coke	Litharge	Sea Moss
Clay	Lithopone	Starch
Carbon Black	Lime, Caustic	Synthetic Resins
Cement	Hydrated	Talc
Carbon	Limestone	Tripoli
Copper Oxide	Marl	Tungsten Ore
Charcoal	Magnesite	Umber
Dry Colors	Manganese	Wood Flour
Drugs	Ochre	Zinc Oxide
Dyes	Phosphate Rock	

Universal Road Machinery Co.

GAYCO

RUBERT M. GAY—DIVSION
117 LIBERTY STREET
NEW YORK, N. Y., U. S. A.

GAYCO

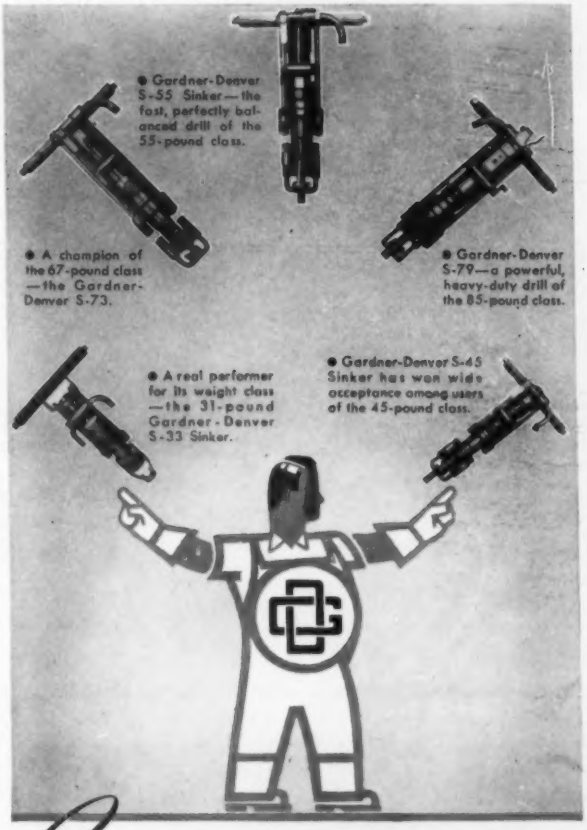
Gentlemen: I want to have better control over costs, quality and uniformity in my separation processing. I am handling .... Send me the Gayco Catalog.

(Fill in as desired.)

Company.....

Name.....

Address.....


● Gardner-Denver S-55 Sinker—the fast, perfectly balanced drill of the 55-pound class.
● A champion of the 67-pound class—the Gardner-Denver S-73.
● Gardner-Denver S-79—a powerful, heavy-duty drill of the 85-pound class.
● A real performer for its weight class—the 31-pound Gardner-Denver S-33 Sinker.
● Gardner-Denver S-45 Sinker has won wide acceptance among users of the 45-pound class.

Choose from the Champions

. . . FOR THE EXTRA FOOTAGE YOU NEED TODAY

FOR increased quarry output—and for the extra footage required during 1942—choose the sinkers that give *extra* performance. You'll find a better sinker of every weight class in the Gardner-Denver complete line. Properly engineered, precision built Gardner-Denver Sinking Drills for every purpose embody the proved refinements you want—and the speed, the power and dependability you must have. For the complete specifications, write Gardner-Denver Company, Quincy, Illinois.

A QUARRY OPERATOR WRITES, "Our equipment includes five Gardner-Denver Sinking Drills, together with a Gardner-Denver Wagon Drill and Air Compresser. Since installing the equipment, we have produced 225,000 yards of pay stone at a total maintenance cost of .0015c per yard."

GARDNER-DENVER PRODUCTS SPEED VICTORY

GARDNER-DENVER *Since 1859*

easily disengaged from the service worn head by unbolting.

In the illustration is shown the hammer as made and as worn in service. It is said that over two-thirds of the metal in the head may be consumed in use before it is necessary to discard it.

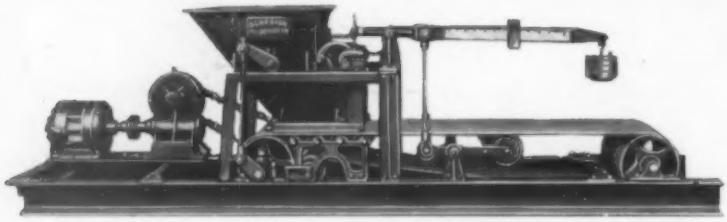
Concrete Curing Compound

TRUSCON LABORATORIES, INC., Detroit, Mich., has developed Tru-Cure, a clear liquid which is sprayed on the wet concrete immediately after finishing. The liquid is said to seal and lock in the moisture immediately.

Although this product was developed, primarily for use on concrete structures for big war jobs and for access highways, to speed up the curing, there are possibilities for its use in curing concrete masonry units and precast concrete. Where adequate steam curing facilities are not available, the liquid should be found useful in increasing the capacity of the concrete products plant.

When used in highway construction, spraying this liquid on the finished concrete is said to produce the equivalent of a 14-day water cure without any of the labor expense of hauling dirt, keeping surfaces wet, applying paper, burlap, cotton mats, making pipe connections and removing them after the curing period is over. Laboratory tests indicate that this liquid curing medium has moisture retaining qualities of better than 96 percent in 24 hours at a temperature of 110 deg. F., or 90 percent at seven days.

SCHAFFER POIDOMETER



Fast, Accurate, Economical in Proportioning Materials

Schaffer Poidometer may be counted upon to step up output and to maintain exactness in the proportioning of materials at all speeds. Sturdily built to stand up under the fast tempo of wartime production its use assures both accuracy and economy.

If you have a proportioning problem—raw or finished materials—write for Catalog No. 2

SCHAFFER POIDOMETER CO.

2828 Smallman St. Pittsburgh, Pa.

Synthetic Rubber Belt

HEWITT RUBBER CORP., Buffalo, N. Y., has completed the manufacture of an all-synthetic rubber conveyor belt which is believed to be the first of its kind made from Buna S synthetic rubber. No natural rubber or reclaimed rubber has been added.

All-synthetic conveyor belt

Buna S is the product of a chemical combination of butadiene and styrene and is the general purpose rubber which the government expects to produce at the rate of 700,000 tons per year in plants now under construction. It is a non-oil-resistant synthetic rubber that will gradually replace natural rubber in 1943 in some of the major lines of Hewitt products for war industries.

Production Award

H. K. Porter Co., Inc., Pittsburgh, Penn., was one of the first Western Pennsylvania manufacturers and also among the first 35 manufacturers in the country selected by the Army and Navy Departments to receive the joint Army-Navy E Award, in recognition of high achievement in the production of war equipment.

According to T. M. Evans, president, the company was advised by Robert P. Patterson, Under Secretary of War, "This award is your nation's tribute to the spirit of patriotism and production effort of your plant and your employes. The men and women of the H. K. Porter Co. have every reason to be proud of their great work in backing up our soldiers on the fighting front."

The H. K. Porter Co., Inc., manufactures locomotives, process equipment and special ordnance material for both the Army and Navy. It is one of the first locomotive manufacturers to receive this award.

SIMPLICITY
GYRATING SCREENS

Use the correct basic principle of Positive Eccentric Action, produced by a solid shaft with the counter-balance machined directly thereon, placing the balance directly under the load.

Other Simplicity features are the special rubber corner supports, screen cloth in tension four ways over a doubly crowned screen deck, and sturdy all steel construction with each machine finished in every detail.

Simplicity Gyrating Screens are available in sizes from a 2′ x 3′ up to a 5′ x 12′ in single shaft assemblies; built in one, two, three, and four decks; as standard inclined types and also as low head types, where desired.

"Write for Bulletin No. 41"

SIMPLICITY ENGINEERING CO.
DURAND, MICHIGAN

Via Barber-Greene

● Securing economical distribution and compact plant design, this Barber-Greene system of conveyors was worked out to screen into three sizes. Outstanding is the fact that the three B-G stockpiling conveyors are supported out of the pile by B-G steel A-frame supports, greatly aiding reclaimation operations.

● The reciprocating feeder, four belt conveyors, and A-frames are all B-G standard pre-engineered units, selected for this construction. Our engineers can help you with your material handling problems.

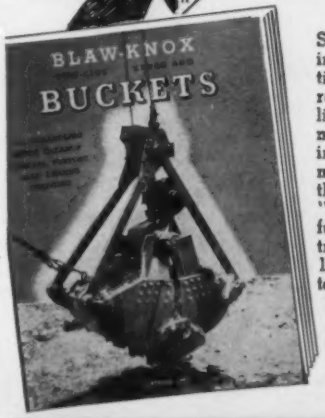
Q-26

BARBER GREENE
AURORA ILLINOIS

★

You have to look to ROCK PRODUCTS for Leadership in the Industry

★



Sealed ball bearing sheaves in the lever arm reduce lost time and expense of bearing replacement, increase cable life and reduce friction, materially improving operating efficiency. This, and many other better features, that make BLAW-KNOX the "wise" buy in buckets are fully explained and illustrated in NEW CATALOG 1757. Send for your copy today.

BLAW-KNOX DIVISION
of Blaw-Knox Company
Farmers Bank Bldg.
Pittsburgh, Pa.

20

BLAW-KNOX
BUCKETS

BLAW-KNOX BINS AND BATCHERS • ROAD FORMS • STREET FORMS • CONCRETE SPREADERS • TAMPING ROLLERS • VIBRATORS
CONCRETE BUCKETS • CLAMSHELL BUCKETS • TRUCK MIXERS • STRIPING MACHINES • "CANTABILE" • ROAD FINISHERS • STEEL FORMS

Cement Regulations

(Continued from page 106)

sum not in excess of the amount by which such freight rate increase resulted in an increased delivered cost to him: **Provided,** That any dealer who raised his price during the period March 17 to 31, 1942, by an amount sufficient to compensate for any increase in freight rates during such period shall not be entitled to raise his price pursuant to this subparagraph.

(c) The maximum prices established under this section shall be reduced to the extent that delivery services or other services furnished by the seller during the period March 1 to 31, 1942, are reduced or eliminated, and shall be subject to cash discounts under conditions as favorable as were offered by the seller during the period March 1 to 15, 1942: **Provided,** That during the period of the war emergency a reasonable period of grace sufficient to permit routine handling shall be allowed to any war procurement agency within which to avail itself of the cash discount.

1346.106. **Less than maximum prices.** Lower prices than those set forth in 1346.104 and 1346.105 may be charged, demanded, paid, or offered.

Sales Taxes, Etc.

1346.107. **Federal and state taxes.** Any tax upon, or incident to, the sale of any cement imposed by any statute of the United States or statute or ordinance of any state or subdivision thereof, shall be treated as follows in determining the seller's maximum price for cement and in preparing the records of such seller with respect thereto:

(a) **As to a tax in effect during the base period.** (1) If the seller paid such tax, or if the tax was paid by any prior vendor, irrespective of whether the amount thereof was separately stated and collected from the seller, but the seller did not customarily state and collect separately from the purchase price in the "base period" the amount of the tax paid by him or tax reimbursement collected from him by his vendor, the seller may not collect such amount in addition to the maximum price, and in such case shall include such amount in determining the maximum price under this Maximum Price Regulation No. 224.

(2) In all other cases, if, at the time the seller determines his maximum price, the statute or ordinance imposing such tax does not prohibit the seller from stating and collecting the tax separately from the purchase price, and the seller does state it separately, the seller may collect, in addition to the maximum price, the amount of the tax actually paid by him or an amount equal to the amount of tax paid by any prior vendor and separately stated and collected from the seller by the vendor from whom he purchased, and in such case the seller shall not include such amount in determining the maximum prices under Maximum Price Regulation No. 224.

(b) **As to a tax or increase in a tax which becomes effective after the base period.** If the statute or ordinance imposing such tax or increase does not prohibit the seller from stating and collecting the tax or increase separately from the purchase price, and the seller does separately state it, the seller may collect, in addition to the maximum price, the amount of the tax or increase actually paid by him or an amount equal to the amount of tax paid by any prior vendor and separately stated and collected from the seller by the vendor from whom he purchased.

1346.108. **Conditional agreements.** No manufacturer of cement shall enter into an agreement permitting the adjustment of the price to prices which may be higher than the maximum prices provided by 1346.104 or 1346.105 in the event that this Maximum Price Regulation No. 224 is amended or is determined by a court to be invalid or upon any other contingency: **Provided,** That if a petition for amendment or application for adjustment has been duly filed, and such petition or application requires extensive consideration, and the Administrator determines that an exception would be in the public interest pending such consideration, the Administrator may grant an exception from the provisions of this section permitting the making of contracts adjustable upon the granting of the petition for amendment or application for adjustment. Requests for such an exception may be included in the aforesaid petition for amendment or application for adjustment.

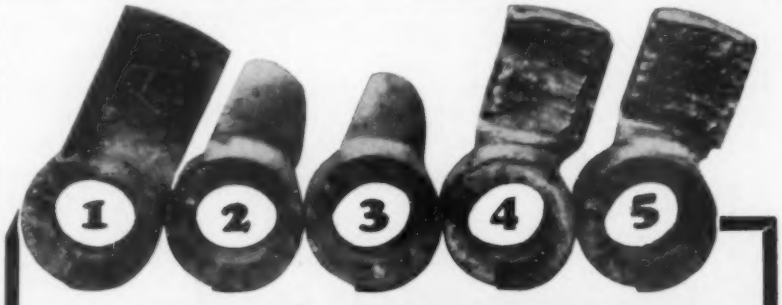
* * * * *

Government Contracts

1346.112. **Petition for amendment or adjustment—(a) Government contracts or subcontracts.** Any person who has entered into or proposes to enter into a contract with any war procurement agency or a subcontract under any such contract, who believes that the maximum price impedes or threatens to impede production of cement which is essential to the war program and which is or will be the subject of such contract or subcontract, may file an application for adjustment of the maximum prices established by this Maximum Price Regulation No. 224 in accordance with Procedural Regulation No. 6, issued by OPA.

(b) **Adjustment of abnormally low maximum prices.** The OPA, or any duly authorized officer thereof, may by order adjust the maximum price established under this Maximum Price Regulation No. 224 for any seller of cement in any case in which such seller shows:

(1) That such maximum prices causes him substantial hardship and is abnormally low in relation to the maximum prices established for competitive sellers of cement; and



COLMONOY SAVES VITAL METALS

The Pug Knives shown above tell a graphic story of the unusual wear resisting qualities of COLMONOY hard-surfacing alloys and overlay metals.

1. **New, 25 lb. pug knife, made of high alloy steel.**
2 **and 3. Same type, after only 3 months of service. Worn beyond efficient operation, with loss of over half of blade material.**
4 **and 5. Same type. Each blade coated with 1½ lbs. of COLMONOY No. 6. In constant use for over a year, and still operating efficiently.**

COLMONOY alloys are playing a vital part in the Rock Products industry. Use them on parts subject to great wear—drag buckets, dipper teeth, hand shovels, conveyor screws, gudgeons, pulverizing hammers, clinker plows and other parts that have tough going.

Write for Full Information

WALL-COLMONOY CORP.

720 Fisher Building, Detroit, Michigan

Branch Offices

NEW YORK CITY, BLASDELL, N. Y.; CHICAGO; TULSA; WHITTIER, CALIF.

Other branches in Canada

COLMONOY

Hard Surfacing Alloys and Overlay Metals

(i) That establishing for him a maximum price bearing a normal relation to the maximum prices established for competitive sellers of cement will not cause or threaten to cause an increase in the level of retail prices.

(ii) Applications for adjustment under this paragraph (b) shall be filed in accordance with Procedural Regulation No. 1 issued by the OPA.

(c) **Special relief.** Any person seeking relief, for which no provision is made in the foregoing paragraphs (a) and (b) of this section, from a maximum price established under this Maximum Price Regulation No. 224 may present the special circumstances of his case in an application for an order of adjustment. Such an application shall be filed in accordance with Procedural Regulation No. 1, issued by the OPA, and shall set forth the facts relating to the hardship to which such maximum price subjects the applicant together with a statement of reasons why he believes that the granting of relief in his case and in all like cases will not defeat or impair the policy of the Emergency Price Control Act of 1942 and of this Maximum Price Regulation No. 224 to eliminate the danger of inflation.

(d) **General amendments and adjustments.** Persons seeking any general modification of this Maximum Price Regulation No. 224 or any exception not provided for therein may file petitions for amendment in accordance with the provisions of Procedural Regulation No. 1, issued by the Office of Price Administration.

Add Mixer Trucks

THE L. C. ALESHIRE CO., Springfield, Ohio, has found it necessary to add nine new Rex mixers to meet the demands for the expansion of war industries. An Allis-Chalmers type R reduction crusher also was acquired.

New Plant

AMERICAN GYPSUM CO. is the name of a new company erecting a plant at Greenriver, Utah. J. W. Peterson, Twin Falls, Idaho, is in charge. It will make pulverized gypsum for rock dusting coal mines.

Open New Quarry

A LARGE STONE QUARRY is being opened near Lyndon, Kans., to supply crushed stone for a bomber field. The crushed stone base will be 9 in. thick topped with concrete. A spur track from the Missouri Pacific Railroad is being built to the quarry.

Concrete Pavement Yardage

AWARDS of concrete pavement for August, 1942, have been announced by the Portland Cement Association as follows:

	Square Yards Awarded During August, 1942
Roads	2,653,279
Streets and Alleys	1,201,874
Airports	10,091,417
Total	13,946,570

MODEL 51

TRADE MARK KEYSTONE REGISTERED U. S. PATENT OFFICE

BLAST HOLE DRILL

CRAWLER MOUNTED AND STABLE IN TRACTION—*Short moves can be made with derrick standing.*

The outstanding feature of this modern rock drill is its welded and riveted sturdy frame. Pounding down six inch holes in hard rock, gives a rock drill a lot of jolts—and that is why KEYSTONE engineers employed a combination of both welding and riveting to give it a rugged and durable frame foundation.

The working mechanism of the Model 51 crawler traction drill is likewise made to take rough service. Shafts and anti-friction bearings are oversized. The length and character of the stroke are adjustable to give greatest efficiency.

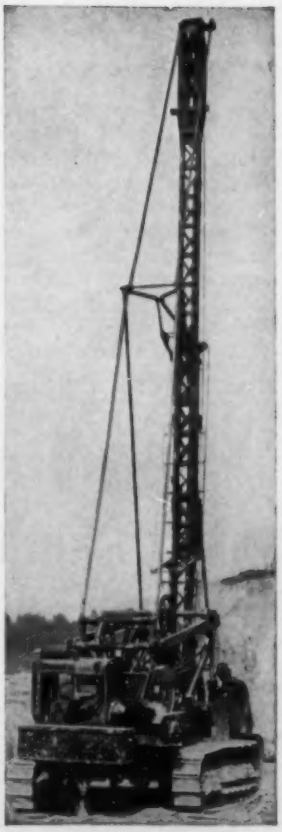
You can be sure of getting a superior piece of equipment that will give you dependable performance for years if you select a KEYSTONE Blast Hole Drill.

You will want to know more about it.

Write for Bulletin BD-1141.

KEYSTONE DRILLER CO.

Beaver Falls, Penna.



WRITE TODAY FOR THIS 24 PAGE BUCKET CATALOG

Just off the press is this two-color, twenty-four-page catalog packed with the facts you'll want to know about buckets. Which bucket is best suited to the job and what each type (rope-reeve, power-wheel, special-purpose, open-type grab and link-type) will do is clearly explained by word, chart and photograph. If you haven't received your copy, write for it today.

THROW YOUR SCRAP INTO THE FIGHT!

INDUSTRIAL BROWNHOIST

BAY CITY, MICH. • DISTRICT OFFICES: NEW YORK, PHILADELPHIA, PITTSBURGH, CLEVELAND, CHICAGO

Canada's Job Control Regulations

By KENNETT R. WILSON

Ottawa Correspondent

FOR NEARLY A MONTH Canada has tested the effects of the drastic job control regulations which Director of National Selective Service, Elliott M. Little, put into effect on September 1. The experience of employers in regard to these laws and the additional restrictive controls which are clearly ahead in Canada, point the way to what is almost sure to happen in the United States as manpower shortages get more acute.

I asked Mr. Little a few days ago how closely Canada was working with the United States in the matter of manpower controls. He said: "We've had conversations, of course, and a round table conference in Montreal recently when some of the U. S. officials came up to see our system at work." But he added:

"The fact is that our manpower problem is much more acute than in the U. S. A. Our so-called "pool" of unemployed is now as low as 25,000 or 30,000—lower than at any time in national history. In the United States there are still many unemployed to draw from. What we have done is to borrow one of the ablest men in the British Labor and Selective Service offices. He is here now helping us to put our plan on the rails. It is Britain which has pointed the way in this thing and we are going to save a lot of haedaches and get our machinery working a lot easier and faster by drawing heavily on British experience."

Here, in brief, are the new manpower controls which affect all employers and employees in Canada:

1. No employer may dismiss any worker and no worker may quit any job without giving seven days' notice in writing of that intention.

2. No person may seek employment and no employer may hire or interview with intent to hire, any person, man or woman, unless the person has a permit to seek employment.

(Certain exceptions are made from the above two orders for such types as casual labor, professional engineers, teachers, provincial government employees, etc.)

3. Without any exception no one capable of working may remain voluntarily unemployed. Anyone, not working full-time for a period of two weeks or more, can be ordered to take full-time suitable work.

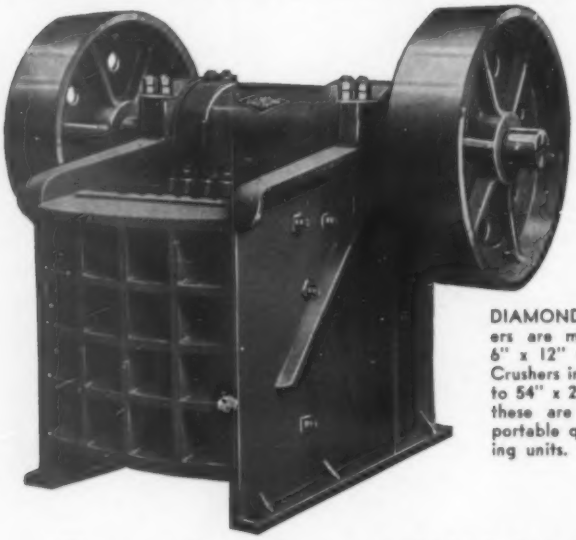
4. All employers must report their future labor needs to Employment and Selective Service offices, and must fill their current needs through the same offices.

All employers must give a notice of separation when workers leave their employment. This notice must be presented at the Employment and Selective Service office where the worker receives a permit to seek work. This permit may restrict the worker to seek employment in a given locality, industry, occupation or establishment. Without a permit no one in Canada may now seek work or be hired.

Canadian employers are finding out that this type of manpower control means an immediate and inevitable lowering in the quality of men and women available for filling jobs.

Another important lesson which Canada is learning is the importance of bringing all manpower controls under one authority. Up till now the draft machinery, the employment offices, and civilian selective service have been under different administration in Canada. Now these are all being brought under National Selective Service with Director Little in charge.

When You Buy a Crusher
What Should You REALLY Buy?



DIAMOND Standard Jaw Crushers are made in 13 sizes from 6" x 12" to 24" x 36" and Roll Crushers in 6 sizes from 16" x 16" to 54" x 24", and various sizes of these are used in stationary or portable quarry plants and crushing units.

These are the things you should look for and *expect* in the crusher you buy:

1. **A base heavy, rugged and properly reinforced to withstand the hardest crushing operations.**
2. **Pitman and plates (or rolls) carefully made of suitably hard material to give long and satisfactory use.**
3. **Proper *balance* for easiest running and consequent economy of power.**
4. **Delivery of *full* capacity.**
5. **Construction primarily based on the hardest type of crushing.**

Don't buy on claims unless those claims can be thoroughly backed by performance records. And speaking of records. DIAMOND has some recent and very outstanding ones we're anxious to talk about. Either we, or any of our dealers will tell you all about it. In fact, we'd like to consult with you on *any* crushing, screening, conveying or elevating problem you have.

WRITE US or contact our nearest dealer for full details of DIAMOND ROCK, SAND AND GRAVEL EQUIPMENT. Free bulletins on request.

DIAMOND IRON WORKS, INC.
ESTABLISHED 1868
AND THE MARR MANUFACTURING CO. DIVISION
MINNEAPOLIS, MINNESOTA, U. S. A.

Canadian experience has shown that the other plan did not make for most effective channelling and use of manpower once the need became really acute.

Magnesium Developments

Canada's new "home-grown" magnesium industry is now swinging into production. The first Canadian plant to manufacture magnesium under the Pidgeon process started operation towards the end of August. By mid-September seven of the ten furnaces were underway with at least three, running full blast. Actual output has been hampered by the fact that the plant will not have dolomitic lime from its own kilns available until mid-October. Meanwhile the plant is operating on purchased dolomitic lime and recoveries are reported as lower than would otherwise be the case.

By mid-October it is expected that the plant will be producing at 70 percent of capacity and very quickly stepped up to full output after that. Production is under the supervision of Wartime Metals Corporation, a Crown company formed by the dominion government. The actual building and operation is in charge of Dominion Magnesium Co., a private concern operating without fee or profit. Canada's new production will go a considerable way to meeting her own needs and relieving the need for imports.

Gypsum Suit Nolle Prossed

THE ANTI-TRUST DIVISION of the U. S. Department of Justice nolle prossed its criminal suit against the United States Gypsum Co. and other gypsum products manufacturers based on licensing agreements for the manufacture of gypsum wall board. It is announced, however, that civil suits will be instituted. The statement followed the dismissal by the anti-trust division of the Department of Justice of its criminal suit in the Federal District Court in Washington, D. C., against United States Gypsum Co. and Certain-teed Products Corp.

The move terminated a series of anti-trust prosecutions started two years ago and constituted the second case within the last year in which the government has failed to sustain its charges of Sherman act violations against gypsum companies, a United States Gypsum statement said.

Last November a verdict was directed by Judge Alan Goldsborough in favor of all defendants in a civil case at the close of six weeks of government testimony.

The statement by United States Gypsum Co. said in part:

"In March, United States Gypsum Co. and Certain-teed Products Corp. moved for a prompt trial of the remaining indictment. The government obtained a continuance of the case to the October term upon the express agreement that the case would be tried at that time.

"Several efforts have recently been made by the department to avoid its agreement in this regard, the government stating in open court that if the trial were to be held the probabilities were that the defendants would be successful.

"The defendants, however, insisted upon their right to a trial in order that they might be cleared of the charges against them. The resulting action is the dismissal of the case.

"In its annual report published for the year 1941, the United States Gypsum Co. stated that the cost to the company of the various antitrust suits brought against it by the government had already exceeded $400,000. Company officials stated that since the date of the report, they estimated another $100,000 had been incurred in the preparation of this case, which has now been dismissed just three weeks before the trial date."

Made of Acid Open Hearth Steel Wire

Round Strand
Flattened Strand
Preformed
Steel Clad
Non-Rotating

The Service Record of this wire rope continues to make and hold friends.

MADE ONLY BY
A. LESCHEN & SONS ROPE CO.
Established 1857
5909 Kennerly Avenue St. Louis, Mo.
New York — Chicago — Denver
San Francisco — Portland — Seattle

For over 30 years the Cement and Allied Industries have used Merrick equipment for weighing, feeding and proportioning. Many original installations are still in daily service. Successful operators continue to specify Merrick equipment, time-tried and proved and built for today's needs.

Send for Bulletin No. 375.

MERRICK SCALE MFG. CO.
188 AUTUMN ST. PASSAIC, N. J.

SAUERMAN
Long Range
MACHINES

Handle More Tons for LESS Money

Almost any pit or bank excavating or stockpiling job can be simplified by using a Sauerman Drag Scraper or Cableway.

This equipment is very flexible and is readily adapted to any ground conditions. First cost is reasonable, maintenance expense is small and the simplicity of operation permits easy one-man control of even the largest Sauerman installation.

There is a size and type of Sauerman machine to meet every capacity requirement from a few tons per hour to many thousand tons per day.

Write for Catalog.

SAUERMAN BROS., INC., 530 S. Clinton St. CHICAGO

Illinois Aggregates Producers

RESPONDING to an invitation by R. E. Weaver, secretary of the Illinois Sand and Gravel Association, producers of sand and gravel and crushed stone in Illinois and adjoining parts of Indiana and Iowa met in Chicago, September 1. The purpose of the meeting was to get a first-hand picture of the Priorities setup as it affects these producers. Don E. Gotham, of the W.P.B., Washington, D. C., was the guest and question answerer. Stanton Walker, engineering director, National Sand and Gravel Association, Washington, was present to introduce the guest and help answer the questions.

In opening the meeting Mr. Weaver paid a well-deserved tribute to the National Association for the assistance constantly given its members in the solution of their war production problems.

Mr. Gotham explained that the W.P.B. is attempting by various and changing methods to determine where critical materials are going, and how important these outlets are to the war effort. In urgent cases he said the telephone was better than a telegram, and he discouraged using telegrams for relatively unimportant cases. He said the proper mail form to use is N.M. 2, which the producer can have copied for himself, or if he is a member of some associations, the association supplies copies.

An amendment to P-56 has been made, Mr. Gotham said, which permits producers to obtain A-1-a ratings for anticipated breakdowns. Formerly the rating was A-1-c. However, it cannot be used indiscriminately. Every case must be passed on by the Mining Branch of W.P.B. In the case of an actual breakdown which holds up production necessary to the war effort, any rating necessary to get the repair part will be issued. Formerly A-1-a was the highest rating available. With the new AAA and AA ratings, mere A ratings will no longer obtain release of many critical materials. The producer in trouble is urged to telephone the non-metallic section of the Mining Branch, W.P.B., Washington, D. C.

Mr. Gotham thought that in spite of the extending use of P.R.P., rock products operators would continue to function under P-56, although just how had not been decided at that time. P.R.P. is designed for manufacturers who use and process critical materials, and if there are any rock products operators who build or repair enough equipment to use more than $5000 worth of unfabricated steel and other critical materials a quarter, they should put themselves under P.R.P. and establish the right to regular quarterly quotas.

Any aggregate producer who is 75 percent or better on war work can get A-1-c or better for repair or maintenance parts. When using the telephone, call Rep. 7500, Washington, D. C., Extension 334. Railway ballast is considered war work.

As regards motor trucks, the Mining Branch, W.P.B., whose telephone number is given above, handles special custom-built trucks used exclusively in the mine or quarry. Any other special equipment for mines, which has not been frozen, is also classified as mining equipment, and comes under a P-56 rating.

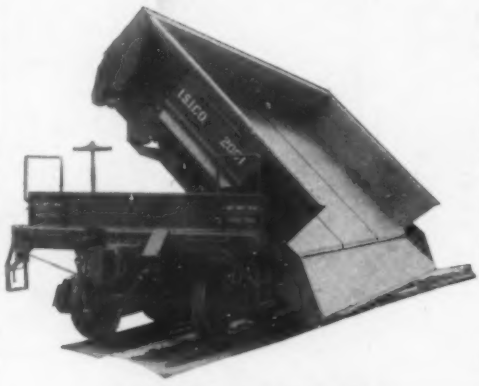
In the case of agricultural limestone, Mr. Gotham said, the Mining Branch would try to see that operators were supplied with enough repair and replacement parts to keep a program as big as that in 1941 alive.

(Continued on page 122)

QUICK-ACTING, STRONG, DURABLE

PSC CARS

ARE DOING THEIR JOB FAITHFULLY & CONTINUOUSLY IN MINING Everywhere!



AUTOMATIC AIR DUMP CAR

Provides rapid discharge of load, free from excessive shock to car or track. Capacities from 12 to 50 cubic yards, and load carrying capacities up to 90 tons. (50-yard car illustrated)

● No need for frequent time-outs to overhaul when you're using rugged, dependable **PSC** Cars. Every one of these high capacity cars is engineered for today's accelerated war-time production.

Keep the facts on the **PSC** line in your files by writing for our informative bulletins.

PRESSED STEEL CAR

PRESSED STEEL CAR COMPANY, INC.
(INDUSTRIAL DIVISION)
PITTSBURGH, PA.

GENERAL

GIVES YOU MORE!

Let us explain how and why—
when you next need a Shovel,
Dragline, Crane or Clamshell.

The GENERAL EXCAVATOR CO.
MARION, OHIO

Boost Production—Lessen Costs with Better-Built DAVENPORTS

STEAM—GASOLINE—DIESEL LOCOMOTIVES—ELECTRIC OR MECHANICAL DRIVE

STEAM—GASOLINE—DIESEL LOCOMOTIVES—ELECTRIC OR MECHANICAL DRIVE

DAVENPORT LOCOMOTIVES — Built the World Over

Tough and capable as Commandos and Rangers, Davenport Locomotives can deliver outstanding and lasting performance for you just as they are delivering in a big way for our Army and Navy, and our Allies where dependability is a vital requirement. Better-Built Davenports are the crowning result of over forty years of keeping pace in the building of fine locomotives—your best bet for getting things done at lowest per ton cost.

How about SCRAP? Have you gathered up every bit? We KNOW the value of SCRAP. The situation is extremely serious.

UNCLE SAM NEEDS ALL OF YOUR SCRAP NOW!

EXPORT OFFICE **BROWN & SITES** 50 Church St., N. Y. Cable Add. "Brosites"

DAVENPORT LOCOMOTIVE WORKS
A DIVISION OF DAVENPORT BESLER CORPORATION, DAVENPORT, IOWA

IMMEDIATE SHIPMENT ON GENUINE FLINT PEBBLES

EQUAL TO FRENCH PEBBLES IN PURITY, WEARING QUALITIES, SHAPE, COLOR! « « « «

The only amorphous flint pebbles of high quality now on the American market, these genuine Nodular Flint Grinding Pebbles are equal in color, purity, wearing quality and shape to now-unobtainable French pebbles.

ALL SIZES

"Arlcy" brand Flint Pebbles are ready for immediate shipment to you in all sizes, from Laboratory to No. 5—supplied either carefully sorted, classified and cleaned or at lower prices—in run-of-mine quality for ore and similar grinding.

WRITE for samples in the size you use

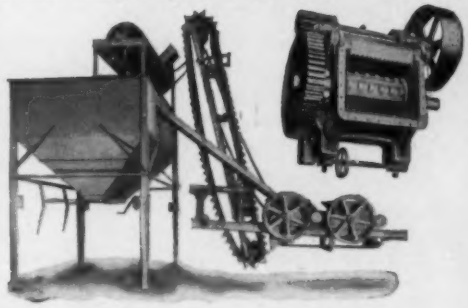
ARLCY

THE RICHARD L. CAWOOD COMPANY
P. O. BOX 743 • EAST LIVERPOOL, OHIO

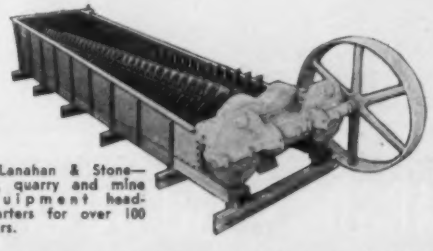
McLANAHAN

SCREENS • CRUSHERS

COMPLETE PLANTS



McLanahan equipment will prepare your plant for more business. Single and double roll and jaw crushers, hammermills, super dry pans—steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, and hoists—complete portable, semi-portable and stationary crushing, screening and washing plants for different capacities of any materials.



McLanahan & Stone—pit, quarry and mine equipment headquarters for over 100 years.

McLanahan & Stone Corp. *Established 1835* HOLLIDAYSBURG, PENNSYLVANIA

TRAFFIC NEWS

Recent Rate Changes

Following are the latest proposed changes in freight rates up to and including the week of Sept. 19

Southern

28507 (carrier). **Phosphate rock and phosphate limestone,** C. L. Eliminate expiration date of Dec. 31, 1942, in connection with rates from Mt. Pleasant-Centreville District to the Lake Ports, Joliet, Ill., and Lansing, Mich., published in L. & N. R. R. I. C. C. A-16462.

28589 (shippers; suggested by carriers). **Phosphate rock, ground,** C. L. Establish 667c gross ton. Florida Mines named in S. A. L., I. C. C. A8041, and A. C. L., I. C. C. B3022 to Philadelphia, Penn., Camden, N. J., Elkton, Md., Marcus Hook, Penn., Paulsboro, N. J., N. Claymont, Del., and intermediate points on the P. R. R.

SPEAKING OF *Performance*

PARSONS

OVAL BAG DUST ARRESTORS

Rate Top Honors

In Parsons Oval Bag Dust Arrestors you find exclusive engineering features that have earned their stripes on sheer performance and efficiency in every-day use under all kinds of conditions.

Patented Oval filtering bags combine all advantages of envelope and cylindrical types, no metal contacts the cloth.

Non-rusting arrestor case, maintenance and inspection on clean air side, instant spotting of leaks.

Simple texrope drive, balanced eccentric mechanism operating rocker type bag, shaking device 100% discharge.

Heavy duty welded hoppers discharged by non-clogging rubber-sealed hopper valves absolutely dust tight.

These are just a few of the many exclusive features that go to make Parsons Oval Bag Dust Arrestors the talk of the trade. Send for free booklet on "Mastery Of The Air."

PARSONS ENGINEERING CORP.
CLEVELAND, OHIO

28590 (shippers; suggested by carrier). **Crude and scrap mica, suitable for grinding purposes only,** C. L. Min. 80,000 lb. Establish from Lineville, Ala., to Biltmore, N. C., 450c and Richmond, Va., 600c net ton.

28598 (carriers). Demurrage rules and charges on **phosphate rock, phosphate rock sinter and superphosphate** on traffic from Florida mines to Florida ports for export and coastwise movement. (a) Cancel exception at present providing for non-application of demurrage rules and charges on phosphate dump cars held at Florida phosphate mines; (b) revise free time at Florida ports on such traffic for export or coastwise movement 7 days, same as currently applicable on other export freight. The provision in the present tariff that demurrage charges will not be assessed at Florida ports when phosphate rock is ordered thereto by railroad within a specified time to be eliminated.

28609 (carrier). **Stone,** C. L. Cancel, as obsolete, rates from Burkeville, Va., to Hopewell and Lynchburg, Va., published in Items 2355 and 2430A of Southern Ry. I. C. C. A10952.

28618 (shipper; suggested by carrier). **Crushed stone,** C. L. Establish 120c net ton, Buchanan, Emil and Rocky Point, Va., to Danville, Va.

Southwestern

28803. **Fluorspar,** Rio Grande Crossings, to interstate points. To establish same rates on fluorspar, C. L., from Brownsville, Eagle Pass, El Paso, Laredo and Presidio, Tex., to eastern points as now published from points in New Mexico in T. C. F. B. Tariff 3-O, I. C. C. 1469, Items 5555 and 5561.

29079. **Gravel and sand,** Crystal Springs, Miss., to Monroe, La. To establish rate of $1.46 per ton of 2,000 lb. on gravel and sand (except asbestos sand and silica sand), carloads, min. wt. 80 percent of marked capacity of car, except that actual weight will govern when car is loaded to full visible capacity; when carrier cannot furnish a car of capacity ordered by shipper and for its own convenience furnishes a car of greater capacity than the one ordered, the car furnished will be used on basis of the minimum carload weight as specified as applicable on car of size ordered; in no case will orders be accepted for cars of less than 80,000 lb. marked capacity, from Crystal Springs, Miss., to Monroe, La.

Subject to Ex Parte 148 increase.

29097. **Minimum weight on vermiculite, other than crude,** from, to and between points in the Southwest. To amend Item 9240, S. W. L. Tariff 173-O; Item 1620-A,

---

Note 1—Minimum weight marked capacity of car.

Note 2—Minimum weight 90% of marked capacity of car.

Note 3—Minimum weight 90% of marked capacity of car, except that when car is loaded to visible capacity the actual weight will apply.

Note 4—Reason: No present or prospective movement.

Note 5—Reason: Comparable with rates from other origins in immediate vicinity.

Note 6—Rates will not apply on shipments in cars with tarpaulin or other protective covering. In such instances the rates applicable on shipments in box cars are to be assessed.

Note 7—The oil, tar or asphaltum not to exceed 10% of weight of the commodity shipped, the shipper to so certify on shipping order or bill of lading.

Corrugations In Hendrick Perforated Plate Make It Screen Better

By corrugating Hendrick Perforated Plate, the irregular surface thus formed makes little peaks and valleys that tumble and sift the particles. By preventing the material from sliding on the plate too rapidly, they assure better screening. Hendrick Perforated Plate may be had with single or double corrugations, flat or rolled to any diameter; in practically any size or shape of perforation.

For screening abrasive materials, for longest life and greatest dependability on heavy screening of all kinds, use Hendrick Perforated Plate made from high carbon steel, heat treated to a hard temper.

HENDRICK MANUFACTURING CO.

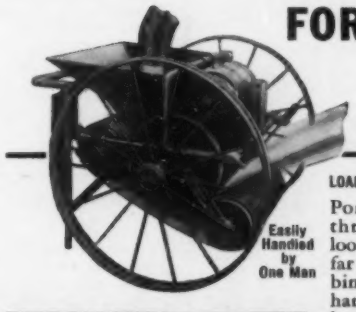
47 Dundaff St., Carbondale, Pa.

SALES OFFICES IN PRINCIPAL CITIES

PLEASE CONSULT TELEPHONE DIRECTORY

Makers of Elevator Buckets of all types, Mitco Open Steel Flooring, Mitco Shur-Site Treads and Mitco Armorgrids. Light and Heavy Steel Plate Construction.

Quick Handling FOR BULK Materials



Easily Handled by One Man

LOAD BOX CARS . . . STORE IN PILES

Portable, one-man unit throws practically any loose, bulk material to the far corners of a box car or bin . . . as far as 30 feet . . . handles up to 80 tons per hour . . . saves manual trimming and constant attention.

Wheel up the loader, start the motor, adjust the feed spout and the S-A Loader-Piler fills cars and bins or stores in piles over 11 feet high without further attention. *See Bulletin No. 240* for full facts.

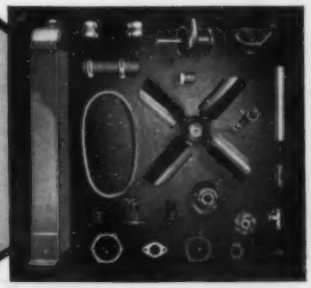
Fills One End of Car Without Readjustment

STEPHENS-ADAMSON MFG. CO.

Car Pullers · Car Loaders · Winches · SealMaster Ball Bearings · Speed Reducers · Conveyors · Elevators · Screens

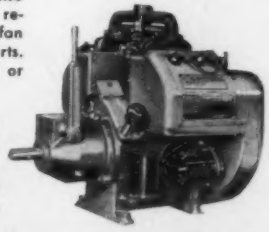
11 RIDGEWAY AVE., AURORA, ILL.

Saved FOR WAR PRODUCTION



In the promotion of today's urgent war effort, *manufacturers, sellers,* and *users* of power-operated equipment (within a 1 to 35 hp. range) can effect substantial savings of critical materials, labor, and machine work at the *manufacturing source* by specifying WISCONSIN AIR-COOLED ENGINE POWER.

These heavy-duty engines require none of the 26 parts illustrated above, which comprise the cooling system of a typical water-cooled engine . . . parts that also require periodical servicing and replacement. One simple flywheel-fan casting replaces all of these parts. And there are no water chores or troubles to worry about.



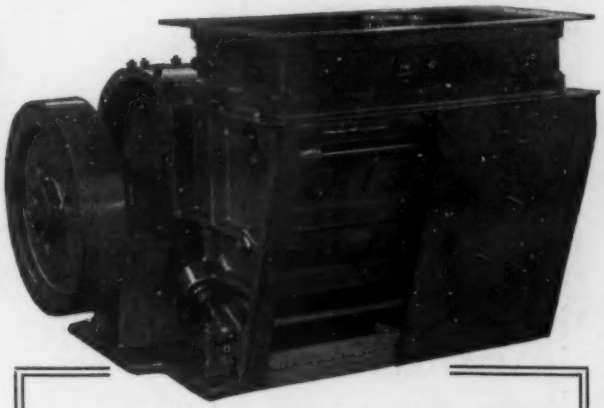
Wisconsin Heavy-Duty Air-Cooled Engines are made in a complete range of types and sizes, 1 and 4 cyl., 1 to 35 hp. Illustrated is the VE-4 V-type 4-Cyl. Engine.

MOST POWER Per POUND

WISCONSIN MOTOR Corporation

MILWAUKEE, WISCONSIN, U. S. A.

World's Largest Builders of Heavy-Duty Air-Cooled Engines



KEEP YOUR PLANT AT TOP SPEED WITH DEPENDABLE ★ AMERICAN CRUSHERS

Those American Crushers are Built to deliver the finished product at low cost per ton. Manganese steel hammers strike the stone in suspension and shatter and distribute it before it reaches the breaker and grinding plates.

A heavy alloy steel shaft gives them their powerful drives, and S.K.F. spherical roller bearings assure their smooth performance.

AMERICAN PULVERIZER CO.

1243 MACKLIND AVE. ST. LOUIS, MO.

HAVE YOU A TOUGH SCREENING PROBLEM?

IF SO, WE MAY HAVE THE ANSWER

We are a SCREENING company with a long and varied experience in the screening field that enables us to correctly analyze and solve most difficulties.

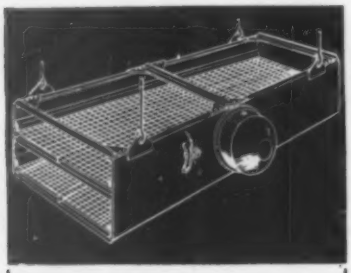
Why not try us? No obligation entailed.

SCREEN EQUIPMENT CO., INC.
9 LAFAYETTE AVE. BUFFALO, N. Y.

builders of

SECO

vibrating screens



GYROSET
VIBRATING SCREEN

5 DISTINCTIVE FEATURES . . .

1. Full Floating Shaft.
2. Eight Positive Stroke Adjustments (quickly changed).
3. Oil Lubricated.
4. Sturdy Construction.
5. Screen Cloth Easily Changed.

★

LOW COST—EFFICIENT—ECONOMICAL

Write for Bulletin No. 939

Productive Equipment Corp.
2926-28 West Lake St., Chicago, Ill.

S. W. L. Tariff 252-A, also Item 13550, W. T. L. Tariff 386-C, as follows: In cars 40 ft. 7 in., or less (see note) 16,000 lb.

Note—Closed cars exceeding 40 ft. 7 in., but not exceeding 41 ft. 6 in. and not exceeding 3925 feet cubic capacity may be furnished at carrier's convenience at minimum applicable to closed cars not exceeding 40 ft. 7 in.

29127. **Lime**, Bromide, Okla., to Interstate points. To establish rates on lime, from Bromide, Okla., to Interstate points on the same basis as was used in arriving at rates from other producing points in the southwest.

New England

58771 (2-R). **Common sand and gravel**, min. wt. 50 tons of 2000 lb., except when cars of lower capacity are furnished for carrier's convenience, the min. wt. will be the marked capacity of the car, but not less than 40 tons of 2000 lb., Martin, N. H., to North Berwick, Me. Present, mileage commodity rates as per B&M ICC A3045; proposed, 75c net ton. Reason: To establish commodity rate comparable with other commodity rates now in effect.

Central

71417 (1), 71417 (2). **Sand (except sand, moulding bonded** (naturally or otherwise) and except ground or pulverized sand), in open top equipment, without tarpaulin or other protective covering, C. L., from Wylie (Clairton), Pa., to destinations as shown below.

Rates in Cents Per Ton of 2000 Pounds
Proposed Rates From Wylie (Clairton), Penn.

To	Prop.
Aliquippa, Penn.	88
Pittsburgh, Penn.	77
Monessen, Penn.	66
Rankin, Penn.	66
McKeesport, Penn.	66
Bessemer, Penn.	66
Homestead, Penn.	66
West Homestead, Penn.	66
Midland, Penn.	110
Donora (Baird), Penn.	88
Latrobe, Penn.	99
Brackenridge, Penn.	99
Verona, Penn.	99
Weirton, W. Va.	121
Steubenville, Ohio	121
Johnstown, Penn.	121
Butler, Penn.	88

71448. **Slag, commercial, crushed** (the product of iron or steel furnaces), in bulk, in closed cars, C. L. Establish on, from Hamilton, O., to Newark, O., 176c per net ton.

71450. **Sand and gravel**, C. L. Cancel Items 1260 to 1284, C. F. A. L. Trf. 575-A, publishing rates on, from Sargents and Portsmouth, O., to destinations on the C. & O. Ry. in W. Va. beyond Gauley, W. Va., classif. basis to apply.

71460. **Gravel.** Amend Section 1, Erie R. R. Trf. 104-K, and C. F. A. L. Trf. 575-A, naming rates on sand from Mahoning, O., to pts. in Official territory by providing therein that rates published from Mahoning on sand, viz.: Sand (except sand, molding, bonded (naturally or otherwise) and except ground or pulverized sand), in open top equipment, will also apply on gravel.

71481. **Slag (refuse product of lead furnaces**, having no commercial value for the further extraction of metal), in open top cars (See Note 3). Establish proportional rate on, from Indianapolis, Ind., to Cairo, Ill., 261c per net ton, via N. Y. C. (C), subject to Ex Parte 148 increase.

71533. **Agricultural limestone unburnt; crushed stone and crushed stone screenings**, in open top cars, C. L. (See Note 3). Establish on, from Woodville, O., to East Greenville, and Harmon, O., 127c per net ton, via P. R. R.-Orrville, O.-W. & L. E., subject to Ex Parte 148.

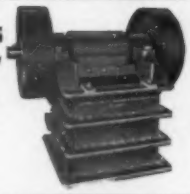
71585. **Crushed stone** in open top cars, C. L. Establish on, from Thornton, Ind., to Dana, Ind. (Wabash River Ordnance Plant), 108c per net ton.

Our 57th Year

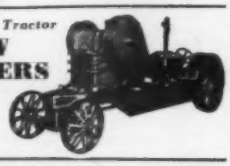
STATIONARY OR MOBILE
ROCK CRUSHERS
For Military Highway, Access Roads and Army & Navy Air Base construction

FREE—Write for Illustrated Catalog No. 601

JAW CRUSHERS
Bronze or Roller Bearing
Heavy armor plate steel or cast steel.
Heavy Duty Construction
Large capacity
Small power Requirements



Self Traveling Tractor
JAW CRUSHERS
Ideal for maintenance road work



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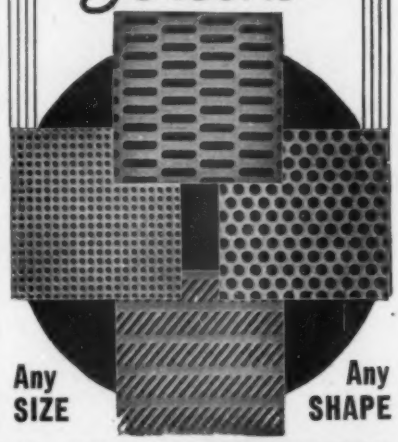
PORTABLE TWO-IN-ONE LIMESTONE PULVERIZER AND ROCK CRUSHER
Adjustable to Produce Road Rock or Agricultural Lime Dust

GRUENDLER
CRUSHERS • PULVERIZERS • GRINDERS
GRUENDLER CRUSHER & PULVERIZER CO.
2920-26 N. Market St., St. Louis, Mo.

PERFORATED METAL
Screens



Any SIZE Any SHAPE

Any METAL Any PERFORATION

For vibrating, shaking and trommel screens.

Excellent material and workmanship for good screening results.

The Harrington & King PERFORATING CO.

5650 Fillmore St., Chicago—114 Liberty St., N. Y.

RECENT DIVIDENDS

Arundel Corp.	$ .25	Oct. 1
Basic Refractories, Inc...	(No action August 20, 1942)	
Bessemer Limestone & Cement Co. pfd.	.75	Oct. 1
Calaveras Cement Co. 7% pfd. (p100) (arrears)	.75	Sept. 15
Ideal Cement Co.	.35	Sept. 30
Industrial Silica Corp. 6½% pfd. (p100) (arrears)	1.62½	Sept. 12
International Minerals & Chem. Corp. In.	.50	Sept. 30
International Minerals & Chem. Corp. pfd.	1.00	Sept. 30
Kelley Island Lime & Transport Co. Com. (np)	.20	Sept. 20
Lone Star Cement Corp.	.75	Sept. 30
Oregon Portland Cement Co. 1st pfd.	1¾%	Oct. 10
Oregon Portland Cement Co. conv. pfd.	2½%	Oct. 10
Pacific Coast Aggregates, Inc.	.03	Sept. 21
Pennsylvania Glass Sand Corp. Com. (np)	.20	Oct. 1
Pennsylvania Glass Sand Corp. 5% pfd.	1.25	Oct. 1
Superior Portland Cement Co. $3.30 Part. Cl. A	.82½	Oct. 1
Yosemite Portland Cement Corp. pfd.	.10	Oct. 1

Mining Gypsum

REGAN gypsum quarry, near Reno, Nev., has been leased by James Regan to the Nevada Copper Belt R. R., which will mine about 5000 tons monthly of gypsum rock. John Quinn is superintendent in charge of operations for Robert Farish, west coast contractor.

PULVERIZERS for the reduction of Cement Materials, Limestone, **Agricultural Limestone,** Fire Clay and All Dry, Refractory Materials.

Capacities: 1 to 60 tons per hour — Finenesses: 20 to 350 mesh

BRADLEY PULVERIZER CO.

ALLENTOWN, PENNA.

To Increase Capacities or Fineness of Present Grinding Plant—
To Reduce Power and Maintenance Costs—
To Insure an Absolutely Uniform Product—

***Use the* BRADLEY AIR SEPARATOR**

MANGANESE STEEL CASTINGS

for PULVERIZERS CRUSHERS ROLLS SCREENS

for SHOVELS DREDGES CRANES CONVEYORS

The Frog, Switch & Mfg. Co.

Established 1881 — CARLISLE, PA.

FARREL BACON CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants.

Engineering Service

EARLE C. BACON, Inc.

17 John St., New York, N. Y.

THE ROSS FEEDER

Completely controls the flow of any size material from Storage Bins, Hoppers or Open-Dump Chutes to Crushers, Conveyors, Screens, etc. High in efficiency. Low in maintenance and power consumption.

Furnished in sizes to suit your operation. Send full particulars for recommendation.

ROSS SCREEN & FEEDER CO.

19 Rector Street, NEW YORK, U. S. A. — 2 Victoria Street, LONDON, S. W. 1., ENGLAND

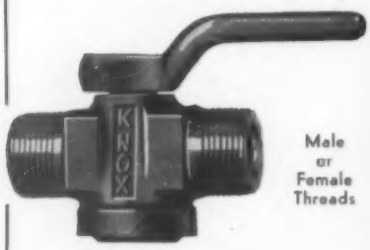
The TY-ROCK FULL FLOATING CIRCLE THROW SCREEN

Coarse and Medium Sizes
Live Rubber Mountings
No Escaping Vibration

HIGH TONNAGES OF ROCK

The W. S. Tyler Company

CLEVELAND, OHIO, U. S. A.



Male or Female Threads

Recognized Universally as the ULTIMATE in Valves and Couplings

KNOX MANUFACTURING CO.

818 CHERRY ST., PHILA., PA.

Since 1911 Producers of

KNOX

Valves-Couplings-Nipples-Clamps-Menders

Illinois Aggregates Producers

(Continued from page 116)

Another point, Mr. Gotham made, was that producers should not let the machinery supplier demand a higher priority than actually needed. There is a tendency, he said, on the part of some manufacturers to demand the highest possible rating, so as to use it in building up their own inventories of critical materials. This practice should be discouraged.

The following producers were present:

Allendale Gravel Co., Allendale, Ill., J. E. Litherland.

Anderson Sand & Gravel Co., Rockford, Ill., Geo. R. Emanucher.

Chicago Gravel Co., Chicago, Ill., Geo. W. Renwick.

Columbia Quarry Co., St. Louis, Mo., E. J. Krause.

H. D. Conkey & Co., Mendota, Ill., O. J. Ellingen.

Consumers Co., Chicago, Ill., G. M. Daire, E. A. Miller.

East St. Louis Stone Co., East St. Louis, Ill., W. E. McLean.

Elmhurst-Chicago Stone Co., Elmhurst, Ill., W. H. Traver.

G. P. H. Sand and Gravel Co., Rockford, Ill., G. P. Holm.

Inland Sand and Gravel Co., Rock Island, Ill., H. J. Larkin.

Koch Sand and Gravel Co., Evansville, Ind., Burt Koenig.

Interstate Sand and Gravel Co., Covington, Ind., E. H. O'Brien.

Larson Bros. Sand and Gravel Co., Rockford, Ill., Frank Larson.

Lehigh Stone Co., Kankakee, Ill., G. A. Shunk.

Lincoln Sand and Gravel Co., Lincoln, Ill., R. E. Weaver.

Materials Service Co., Chicago, Ill., S. J. Marks.

McGrath Sand and Gravel Co., Lincoln, Ill., T. E. McGrath, W. W. Ropers.

Merom Gravel Co., Indianapolis, Ind., W. H. Wyckoff.

Northern Gravel Co., Muscatine, Ia., E. W. Boynton, C. E. Graebner.

Wabash Sand and Gravel Co., Terre Haute, Ind., L. F. Hart.

Western Indiana Gravel Co., Lafayette, Ind., J. H. Law.

OBITUARIES

HAROLD C. RYDER, advertising and sales promotion manager, Hayward Co., New York, N. Y., died recently at the age of 49. Mr. Ryder was born in New York City in 1893. After leaving

Harold C. Ryder

school, he entered the employ of the Hayward Co. in 1907. With the exception of service as a member of the U. S. Signal Corps in the first World War, Mr. Ryder was continuously connected with the company for the past 35 years. He was very prominent in the early days of the manufacturers' divisions of National Crushed Stone Association and the National Sand and Gravel Association, and served as chairman of these divisions.

•

LAWRENCE C. NEWLANDS, president, Oregon Portland Cement Co., Portland, Ore., died recently at the age of 65. Mr. Newlands, who had headed his concern since 1915, was also past president of the Portland Chamber of Commerce. He was elected a director of the United States Chamber of Commerce in 1934 and two years later was appointed a member of the national defense committee of that organization. His last activities centered in attempted development of a Portland-to-the-Orient steamship line in

Save to Win!

The Brooks LOAD LUGGER

contributes to the national conservation program, because it makes a truck more efficient and increases the number of payloads that can be handled per day.

You can ease the truck shortage by mounting a Load Lugger on the chassis, and using several detachable dump buckets for loading, hauling and dumping continuously. This saves lost time in loading, and enables one truck to do the work of many. Try this faster, cheaper method for quarry work, road building, feeding crushers or loading open cars.

CONSERVE TRUCKS by using BROOKS Load Luggers

Write for CATALOG 44

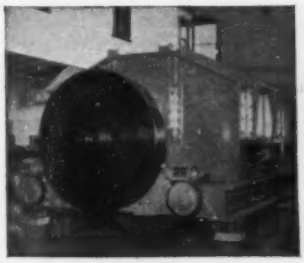
Brooks EQUIPMENT AND MFG. CO.

KNOXVILLE 808 Davenport Road TENNESSEE

Distributors in all Principal Cities

ANOTHER "PENNSYLVANIA" REVERSIBLE HAMMERMILL

ready to "go on the line" in a new Cement plant designed for top efficiency in every Department.



- Major crushing by smashing impact
- Automatic hammer turning
- Product sizing control, and wear compensation, assured by Duplex cage adjustments
- Reduced power demand
- Sharply cut maintenance cost

are some of the outstanding advantages which this REVERSIBLE Hammermill will provide in the Secondary Preparation for modern Raw Side Grinding Mills.

Send for Bulletin No. 1030, and PUT YOUR REDUCTION PROBLEMS UP TO US.

PENNSYLVANIA CRUSHER COMPANY

Liberty Trust Bldg.
PHILADELPHIA, PA.

RYERSON CERTIFIED STEELS

10 Strategically-Located Steel-Service Plants

Principal products include—Alloy Steels, Tool Steels, Stainless Steel, Hot Rolled Bars, Hoops and Bands, Beams and Heavy Structurals, Channels, Angles, Tees and Zees, Plates, Sheets, Cold Finished Shafting and Screw Stock, Strip Steel, Flat Wire, Boiler Tubes, Mechanical Tubing, Rivets, Bolts, etc. Write for Stock List. Joseph T. Ryerson & Son, Inc. Plants at Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City.

HAYWARD BUCKETS

WON'T QUIT OR CAUSE TIME OUT

A Hayward Bucket keeps the job going ahead on scheduled time. It won't quit or cause time out.

THE HAYWARD COMPANY
202-204 Fulton Street
New York, N. Y.

WILFLEY centrifugal SAND PUMPS

for Slurries, Sand Tailings Slimes, Acid Sludges

Save Pumping Cost

Continuous operation without attention for long periods. Stuffing box, stuffing, gland water ALL eliminated. Close clearances maintained by easy slippage seal adjustment. Heavy pumping parts of material best suited for YOUR particular problem. Complete engineering service. Prompt shipment of parts. The most efficient and economical pump you can buy. *Write for Complete Catalog*

A. R. WILFLEY & SONS, Inc. Denver, Colo., U. S. A.

NEW YORK OFFICE: 1775 BROADWAY

Denver "SUB-A" Flotation Cells

Denver "Sub-A" (Fahrenwald) Flotation Cells are standard the world over and are used to concentrate or beneficiate nonmetallic as well as metallic minerals. Distinct advantages include circulation of coarse material, elimination of choke-ups and no pumps or elevators are needed to recirculate products. At left, Denver "Sub-A" Cells operating in a large milling plant. Write today for new Bulletin No. F11-B.

Denver Equipment Co.
1500 Seventeenth St.
Denver, Colorado
New York, N. Y., 50 Church St.
Salt Lake, Utah, McIntyre Bldg.
Chicago, Ill., 1005, 69 W. Wash.
Toronto, Ont., 45 Richmond St.
Mexico, D. F., Edificio Jalisco

UNIVERSAL SCREENS and "UNIVIBE" RIDDLES

Complete line of—
Tried, Proved and Guaranteed Vibrating Screens. Since 1919, the BEST in screening equipment at the LOWEST COST.

NEW! 32-page Catalog on Screens and Screening. Just ask for Catalog No. 107.

UNIVERSAL VIBRATING SCREEN CO.
RACINE - - WISCONSIN

ROCK PRODUCTS

The Industry's Recognized Authority

Keeps you in step with every trend, every development in the Rock Products and Concrete Products Industries. It is edited to fit your exact needs.

ONE YEAR (12 Issues) only . . . $2.00
Or TWO full years for 3.00

309 West Jackson Blvd., Chicago, Illinois

PERFORATED METAL SAND AND GRAVEL SCREENS

Manufactured exactly to your specifications

Any size or style screen, in thickness of steel wanted with any size perforation desired.

We can promptly duplicate your present screens at lowest prices

CHICAGO PERFORATING CO.
2437 West 24th Place
CHICAGO, ILLINOIS
Canal 1459

1940. Mr. Newlands was born in Kingston, Ontario, Canada, March 6, 1877. He attended Queens University at Kingston, graduating in engineering in 1899. He came to Oregon in December, 1915.

•

WORLEY JESS BROWN, better-known to a host of friends as "Jess", died recently at the age of 59. Mr. Brown had been vice-president and sales manager of the Dixie Sand and Gravel Corp., Chattanooga, Tenn., a subsidiary of the Penn.-Dixie Cement Corp., since 1928, but he also was well-known throughout the portland cement industry with which he had been identified for many years before going into the sand and gravel business. He also headed the Ready Mixed Concrete Co., Chattanooga, Tenn., of which his son, W. L. Brown, was an officer.

A native of Whiteside County, Illinois, Mr. Brown received his early education in that state and then entered the University of Michigan from which he graduated in the class of 1907 with the degree of chemical engineer. In the same year, he secured a job with what was then known as the United Kansas Portland Cement Co. Later he joined the staff of the Dixie Portland Cement Co., Richard City, Tenn. He remained with this company until 1911 when he went with the Edison Portland Cement Co., at New Village, N. J. He returned to the Dixie Portland Cement Co., in 1913, continuing until the last World War when he became a Captain in the Ordnance Department. On his return to civil life, he again joined the Dixie cement company. In 1921, however, he became associated with the National Cement Co., Birmingham, Ala., and in 1924 became connected with the Lehigh Portland Cement Co. In 1928, he accepted a position as sales manager for the Penn.-Dixie Portland Cement Corporation at Chattanooga, Tenn., serving in this capacity until he was selected to manage the Dixie Sand and Gravel Corporation.

Mr. Brown made many friends through his kindly humor. His Christmas Cards with a message in his own verse expressed his own friendly character.

•

THOMAS N. HAFFNER, superintendent of the Keystone Portland Cement Co., Bath, Penn., died September 9 after a short illness. Mr. Haffner had from time to time been a contributor to ROCK PRODUCTS and at the time of his death was writing a book on the subject of cement plant management.

New Incorporations

Accord Lime Industry, Inc., with principal offices in Accord, N. Y., has been organized for the purpose of manufacturing, purchasing, quarrying and dealing in all kinds of cement, lime, plaster, fertilizers, etc., with a capital of $50,000 to consist of 500 shares of common stock of $100 par value. The incorporation papers state that the corporation may have from three to five directors.

Georgia Mica Co., Cleveland, Ohio, has been incorporated with a capital of 250 shares, no par value. Incorporators are Byron D. Kuth, William A. Moran, and Bert D. Bradley. Kuth & Trenkamp, N.B.C. Building, Cleveland, are the agents.

National Concrete Curing Materials Co., Inc., Manhattan, N. Y., has received incorporation papers to deal in materials used in the curing of concrete, with a capital of 100 shares, no par value. Theo. E. Apstein, 42 Broadway, New York City, is the agent.

The Bristol Concrete Co., Bristol, Conn., has been organized with a capital of 20 shares, $100 par value. Officers are John S. Dunning, Granby, Conn., president and secretary; Richard B. Dunning, West Hartford, vice-president and treasurer; Stewart N. Dunning, Bloomfield, chairman of the board of directors.

Invisible Mortar Joint Stone Co., Wichita, Kan., has been organized with a capital of $10,000. O. D. Burnam is the resident agent.

Boulton Gravel and Construction Co., Marion, Ohio, has filed articles of incorporation to operate a gravel pit and sell gravel to private concerns and individuals and possibly to engage in road construction work. Incorporators are Mr. and Mrs. Ralph Boulton of 1043 Davids St. and Mr. and Mrs. Leon Boulton of Toledo.

We Specialize in

New and

Rebuilt Equipment

KILNS, COOLERS, DRYERS,

CRUSHERS, TUBE MILLS,

CRANES, ETC.

MOTORS, GENERATORS AND

ELECTRICAL EQUIPMENT

Write us regarding the equipment you seek

WEBBER EQUIPMENT CO.

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You have to look to ROCK PRODUCTS for Leadership in the Industry

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Classified Advertisements

POSITIONS WANTED — POSITIONS VACANT Set in six-point type. Minimum $1.00 each insertion, payable in advance.

INFORMATION—Box numbers in care of our office. An advertising inch is measured vertically in one column. Three columns, 30 inches to the page.

CLASSIFIED—Displayed or undisplayed. Rate per column inch, $5.00. Unless on contract basis, advertisements must be paid for in advance of insertion.

30,000 CAST IRON STEEL SPLIT PULLEYS IN STOCK

Sizes 1½ x 1½ to 84 x 20

20—58x12 C.F.	10—42x10 C.F.	200—28x8 S.F.	800—26x4 C.F.	100—20x5 S.F.	400—12x4 C.F.	200—8x3 C.F.
19—50x10 C.F.	20—36x10 C.F.	500—26x6 C.F.	200—20x5 C.F.	500—15x2 C.F.	500—12x2 C.F.	200—5x3 C.F.

and 30,000 Other Pulleys of Almost Any Size

1600 Drop Hangers — 800 Hyatt 2000 Babbitted Bearings — Thousands of Sprockets — Chain — Gears — Bearings — Both New and Used — All Guaranteed for Service

No Priorities Needed for Used Power Transmission Equipment

TE-CO RUBBER BELTING IN STOCK 3—4—5—6 AND 8 PLY ANY LENGTH OR WIDTH TO 48 INCHES

18—24 INCH—4-5 PLY "I'M GOOD" RUBBER COVERED 1/8-1/32 CONVEYOR BELTING

TEUSCHER PULLEY AND BELTING CO.

Catalog L on request

801-803-805 N. 2ND ST. "THE TEST OF TIME SINCE '99" ST. LOUIS, MO.

CONCRETE EQUIPMENT

B.K. 750 bbl. Bulk Cement Bin, weigh batcher.
B.K. 325 bbl. Bulk Cement Bin, weigh batcher.
Butler 120 yd. 3 compt. bin with weigh batcher.
Butler 60 ton, 2 compt. bin with weigh batcher.
B.K. 50 ton, 2 compt. bin with weigh batcher.
Fuller Kinyon bulk cement unloader, portable.
Fuller C40 rotary air compressor, electric.
Rex Pumpcrete Model 200 with 750' pipe.
Rex Pumpcrete Model 190 with pipe.
Rex Pumncrete Model 180 with 500' pipe.
Smith 27E Paver with 40 foot Tower.

SPECIALS!!!

Derrick Boat equipped with 20 ton Wiley Whirley, 100' bm., 12 x 12 Steam Hoist. Hull 35 x 114 x 10'.
Butler 16 cu. ft. Asphalt Pug Mill.
2—Steel Stiff-leg Derricks, 10 tons, 100' bm.
2—Steel Stiff-leg Derricks, 15 tons, 110' bm.
Hardinge Conical Ball Mill, 4½'x16".
Sullivan Compressor, 1051 cu. ft., P.-M. engine.
American Compressor, 425 CFM., 50 lb. pressure, elec.
Allis-Chalmers cent. pump, electric, 3500 GPM.
Lawrence cent. pump, Vortex, 8" Portable, gas.
Worthington 8" cent. Bronze impeller, gas, port.
Barnes cent. 8" pump, gas, portable.
Gould cent. 8" pump, gas, portable.
Dredge Pump 16" FH. cent. 200 HP AC motor.

CRUSHERS—CRUSHER PLANTS

Gyratory crushers: K.V.S. 26, 37-S, 49; Telsmith 32, 8A, 8B; Traylor 8"; McCully 13", 8", 6".
Jaw: 6x15, 9x16, 10x20, 14x24, 12x26, 13x30, 15x36, 16x32, 24x36.
Complete Rock Crushing Sand & Gravel Plants.

BUCKETS—STONE SKIPS

1½ yd. Williams Clamshell, rehandling.
2 yd. Hayward Clamshell, rehandling.
1—1¼ yd. Hayward Clamshell Rehandling.
2—½ yd. Haiss rehandling clamshell.
¾ yd. Haiss rehandling clamshell.
Erie ¾ yd. Rehandling, clamshell.
20—Battleship Buckets, 2 to 3 yds.

SHOVELS—CRANES

Bucyrus Erie Model 1630 electric tunnel shovel.
Bucyrus Erie 50B Steam Shovel, 2 yds.
Bucyrus Erie 37B, 1¼ yd. Gas Shovel.
P & H Model 600A 1 yd. Gas Shovel.
Marion Model 32 Steam Shovel, 1¼ yds. cap.
Marion Type 7, 1 yd. Gas-Electric Shovel.
Northwest Model 105 gas Crane, 60' boom.
Northwest Model 4, 1¼ yd. gas shovel.

LOCOMOTIVES—CARS

Vulcan 8 ton, std. gauge, gas.
Milwaukee 6 ton, std. gauge, gas.
Whitcomb 4½ ton, std. gauge, gas.
2—Vulcan 6 ton, gas, 36" gauge.

RICHARD P. WALSH CO.
30 CHURCH STREET NEW YORK

IMMEDIATE SHIPMENT LOW PRICES

NEW RUBBER

GUARANTEED HIGH GRADE

CONVEYOR and TRANSMISSION BELTING

CONVEYOR BELTING
ABRASIVE RESISTANT COVERS

Width	Ply	Top Covers
48"	—8	—1/8" —1/16"
42"	—5	—1/8" —1/16"
36"	—6	—1/8" —1/16"
30"	—6	—1/8" —1/16"
30"	—5	—1/8" —1/16"
24"	—5	—1/8" —1/32"
24"	—4	—1/8" —1/32"
20"	—5	—1/8" —1/32"
20"	—4	—1/8" —1/32"
18"	—4	—1/8" —1/32"
16"	—4	—1/8" —1/32"
14"	—4	—1/16" —1/32"
12"	—4	—1/16" —1/32"

TRANSMISSION BELTING
HEAVY-DUTY— FRICTION SURFACE

Width	Ply	Width	Ply	Width	Ply
18"	—6	10"	—6	6"	—5
16"	—6	10"	—5	5"	—5
14"	—6	8"	—6	4"	—5
12"	—6	8"	—5	4"	—4
12"	—5	6"	—6	3"	—4

ELEVATOR BELTING
HEAVY DUTY RUBBER COVERED

Width	Ply	Top Covers
12"	—6	—1/16" —1/16"
14"	—6	—1/16" —1/16"
16"	—6	—1/16" —1/16"
18"	—6	—1/16" —1/16"

ENDLESS "V" BELTS
"A"—WIDTH—All Sizes
"B"—WIDTH— " "
"C"—WIDTH— " "
"D"—WIDTH— " "
"E"—WIDTH— " "
Sold in Matched Sets

RUBBER HOSE
ALL SIZES FOR AIR — WATER — STEAM — SUCTION — FIRE — WELDING ETC.

INQUIRE FOR PRICES :—: MENTION SIZE AND LENGTHS

CARLYLE RUBBER CO., Inc.
62 PARK PLACE NEW YORK, N. Y.

FOR SALE
SAND & GRAVEL DREDGE

250 H.P. direct connected motor.
10" Morris Pump, 12" suction.
35 H.P. motor to drive rotary cutter.
15 H.P. motor to drive winch hoist.
7½ H.P. direct connected Worthington pump.
"A" frame & rotary cutter, winch, etc.
All electrical equipment, such as girds, switches, starters, wiring, controllers, transformers, etc.
Dredge 40' x 20' x 4' with superstructure.
Pipe & fittings on dredge.
LOCATED IN CENTRAL IOWA CITY
This unit is a steal at our asking price.
Write Box 864, Des Moines, Iowa

FOR SALE

1—3-yd. Page—Heavy Duty Dragline Bucket.
1—85-ft. Boom for 3-yd. Bucket.
1—60-ft. Boom for 2-yd. Bucket.
1—Class 14 Bucyrus Dragline, Good Operating Condition.
1—336 Cedar Rapids Reduction Crusher.
1—Brownhoist Crane—50-ft. Boom, 1-yd. capacity.
1—No. 3 Austin-Western Gyratory Crusher.
LOCATED AT OUR PLANT HERE.
Wire or write us—
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SELL | RENT
4

That handy man of yours with a monkey wrench and a piece of hay wire, who pinch hits for a mechanic, may soon be drafted. Be wise. Be prepared. Get rid of your dilapidated equipment now and buy GOOD EQUIPMENT from E. C. A.

FOR SALE

LOCOMOTIVES

1—7 ton Whitcomb 36" gauge gasoline locomotive, type MO, power gasoline engine.

4—7 ton Plymouth type 2, Model D L 24" gauge locomotives power gasoline engines.

3—7 ton Whitcomb type MO 24" gauge, power gasoline engines.

1—7 ton Plymouth 24" gauge type 2 Model HL power gasoline engine.

1—3½ ton Plymouth 24" gauge Model A L 105 gasoline power.

1—3 ton Whitcomb 24" gauge type U T gasoline power engines.

PNEUMATIC TOOLS

Jack Hammers

13—Jack Hammers, Ingersoll-Rand, Gilman, Sullivan, Gardner-Denver, and Cleveland.

Chipping Hammers

10—Chipping Hammers, Chicago Pneumatic, Ingersoll-Rand, and Thor.

Riveting Hammers

30—Riveting Hammers, Thor, Ingersoll-Rand, Chicago-Pneumatic, Boyer, and Sullivan.

Paving Breakers

12—Paving Breakers, Ingersoll-Rand, Gardner-Denver, Sullivan and Thor.

Air Drills

10—Air Drills, Chicago Pneumatic and Cleveland.

Spades

7—Spades, Ingersoll-Rand. Weight, 23 to 40 lbs. each.
Also a number of grinders, wood bores, and drifters.

Wagon Drills

2—Gardner-Denver wagon drills with 16' high derricks. Has hand winches for raising and lowering. Equipped with model No. 21 Gardner-Denver drills. Will channel 30' deep.

1—Ingersoll-Rand wagon drill with derrick mounted on four steel wheels, equipped with Ingersoll-Rand air hoist for steel drill. Has Ingersoll-Rand drifter broached for 1¼" steel.

1—Cleveland wagon drill, Model DR-6, mounted on two pneumatic tired wheels. Latest model, can adjust for any direction drilling. Equipped with air feed and blowing device.

SHOVELS AND CRANES

1—No. 1 Brown hoist, Ser. No. 10271 with 35' boom.

2—B-2 Erie steam cranes with 40' boom.

1—No. 2 Northwest shovel, ser. No. 2908, ½ yd. shovel front.

1—Mdl. 301 Koehring, ser. No. 544, with 45' boom.

1—Universal Truck Crane, ser. No. 308, ⅝ yd. 24' boom, mtd. on a Mack truck.

SHOVEL AND PULL-SHOVEL ATTACHMENTS

11—ATTACHMENTS

1—2 yd. Link Belt K 55.
1—1¼ yd. Link Belt K 42.
2—1 yd. Erie Gas Air GA-2.
1—1 yd. Osgood.
1—1 yd. North-West 105.
1—⅜ P & H 206.
All above are shovel attachments.
2—1¼ yd. Link Belt K 42.
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EQUIPMENT CORPORATION of AMERICA

AIR COMPRESSORS

C-P 14x12, 529' belted 100 hp motor
Schramm 4 cyl. 360' V drive 60 hp motor
I-R 275', Waukesha Engine, on skids
Curtis 2 stage No. 95 with 5 hp motor

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1000' 42" 6-8 ply conveyor belt
450' 30" 6 ply conveyor belt
120 Robins 42" trough idlers
16" x 40' belt conveyor
100 selected head and tail pulleys
Cotton belts 12", 14", 18", 30", 48"

CRUSHERS

Farrell jaw crushers 24x13 & 15 x 9
Champion jaw crusher 24x12 & 13x7½
Reliance jaw crusher 16x9
Traylor 11" Bulldog gyratory on wheels
Double crushing rolls, 16x24 & 16x42
Single spiked crushing roll 24x24"
American double crushing rolls 36x30"
American Disintegrator rolls 18x30 & 24x30
Marcy Roller Mill 1'x2' with steel balls

SCREENS

Leahy 3 deck 4x6' direct motor driven
Hummer vibrating, type No. 31 & No. 37, 1-2 deck
Revolving Screens, 2x8', 2x9', 30"x12', 4x18'

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8" continuous steel bucket elevator, 30' enclosed
18" continuous steel bucket elev. 35' on chain
20" continuous steel buckets, 40' on 8 ply belt
30" continuous steel buckets, 40' on 2 strands chain
Malleable bucket elevators with 6" to 20" buckets on belt or chain of all heights.
Salem buckets 5", 9", 10", 14", 16", 18" on belt and chain
18"x8" round bottom bucket elev. on chain, 40' high
300' elevator belt 20"—8 ply water proofed
Several tons selected gears, sprockets, elevator chains

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75 hp F-M 2 cyl. Diesel engine, 300 rpm
2 Fairbanks Bulldog oil engines 5 hp, 450 rpm
Nat'l 2 drum 25 hp electric dragline hoist
15 hp single drum Lidgerwood hoist, gas or electric
Two 15 hp electric car pullers
36" gauge 8 ton and 4 ton locomotive
30" gauge Mercury 2 ton storage battery locomotive
6—24" gauge flat cars 4'x12' platforms
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28" x 12' Telsmith screw washer, V belt
2—12' dia. storage tanks, 90 and 50 ton capacity
Revolving Dryer 4'x21' with 15" center flume
6 Kron dial scales, 3—250 lb., 3—2000 lb.
Centrifugal pumps, motors, engines

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1 MODEL E 187 h.p. BUCKEYE DIESEL ENGINE—5 cylinder—400 r.p.m.—V belted to 125 KW Allis Chalmers 220-volt 60-cycle 3-phase generator with exciter, with pumps, oil filters, heat exchanger, air bottles, compressor, switch board panel, voltage regulator and other appliances. All for $7200.00 Lima, Ohio. In daily operation and in excellent condition.

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HEAVY DUTY — **RUBBER HOSE** — **GUARANTEED**

WATER HOSE

Each Length with Couplings Attached

I.D. Size	Length	Price per Length
¾"	25 feet	$4.50
	50 "	9.00
1"	25 "	6.25
	50 "	12.00
1¼"	25 "	7.50
	35 "	10.50
	40 "	12.00
	50 "	15.00
1½"	25 "	10.00
	35 "	14.00
	50 "	20.00

LARGER SIZES ALSO AVAILABLE

AIR HOSE

I.D. Size	Length	Per Length	Couplings
½"	25 feet	$5.00	$1.50 Pair
	50 "	10.00	1.50 "
¾"	25 "	7.50	2.50 "
	50 "	15.00	2.50 "
1"	25 "	10.00	3.50 "
	50 "	20.00	3.50 "

1¼"—Price on Application
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All Prices—Net—F.O.B. New York—Federal Excise Tax Included
ALL HOSE GUARANTEED

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1—Monighan Steam Dragline, skid and roller, 100' boom, 3½-yd. bucket. Butt-strapped boiler. 10½" x 12" main engine.

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5,000—8x16" Pressed Steel Cored Pallets for 1¼" face shell blocks, each	.25
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1—50 ton American 4 wheel saddle tank, code boiler, standard gauge, being rebuilt.

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2—40 ft. steel flat cars, 100,000 lb. capacity, cast steel "U" section truck frames, new decks, interchange condition.

1—33 ton Standard Gauge Vulcan saddle tank, ASME code boiler.

Crane or Dragline Fronts for Marion 37 and Bucyrus 50-B, One Each.

1—1½ Yd. Rehandling Clamshell Bucket, Practically New.

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ALL SECTIONS

Also contractors' equipment, "V" shaped and Western cars, 24 and 36-in. gauge, portable track, gas locos, frogs and switches. Attractive prices quoted. Wire, write or telephone for quotations.

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1—Kennedy No. 27 gearless gyratory.
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1—Set 30" x 16" Traylor Rolls.
1—600 cu. ft. Ingersoll-Rand Steam Compressor.

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CLAMSHELL BUCKETS, SKIPS & GRAPPLES
Owen R A & H Stone Grapples.
2 Yd. OWEN Type S Material Handling.
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18 Steel Skips 6¼ x 6 x 2½.
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46—KOPPEL 1½ Yd. 24 & 30 In. Ga., V Shaped.
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20—Std. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.
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9—50 ton std. ga. heavy duty, flat cars.

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Gas: 15, 30, 60, 100 & 120 HP.
Electric: 30, 52, 80, 100 & 150 HP.
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75, 90, 180, 200 HP F. M. Engines.
110 HP Ingersoll Rand Engine.
175 KVA Worthington 3/60/2300.
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6x8 Pebble Mill & 5x5 Batch Mill.
5'x22" HARDINGE CON. Dry Ball Mill.
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4x8, 8x6 & 10x9 Straight Ball Mills.
4x16, 5x18 & 5x22 Tube Mills & 6'x22'.
3½ x 8 & 5x7 Air Swept Tube Mills.
2x4½, 6x12 & 5x12 ROD MILLS.

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JEFFERY 24x20 & No. 1 Sturtevant Ring Roll.
RAYMOND Auto Pulverizer No. 0000, 0 & 3.
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10,000 Gal., 15,000 Gal. & 20,000 Gal. Cap.

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116 Ton Blaw Knox 2 Compt.

400 BARREL CEMENT BIN
400 Barrel Butler Portable Steel Cement Bin with Fuller automatic batcher, push button control.

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8, 10 and 14 ft. Separators, Gayco & Bradley.

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36x60 Fairmount & 36x20 Diamond.

JAW CRUSHERS
10x8, 13x7½, 14x7, 15x9, 15x10, 16x9, 16x12, 16x10, 18x11, 20x8, 20x6, 20x10, 20x12, 26x12, 30x15, 30x13, 36x15, 36x30, 36x18, 36x14, 36x9, 36x6, 36x10, 36x24, 42x9, 48x42, 48x36, 60x42, 84x66, 36x16, 9x36.

CONE & GYRATORY CRUSHERS
42 in. McCully Mammoth Gyratory.
5 No. 19, 25, 37 & 49 Kennedy.
18 in..24 In..30 in..36 in. and 48 in. Symons Disc.
4—10 TZ Traylor 4 ft. Gyratory.
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2—Traylor T-12 Bulldog Gyratory, also 16 inch 8 in. Traylor T. Gyratory.
17 Gates K—Nos. 2, 4, 5, 6, 7½, 8 & 9½.
10 Inch Austin Model 105.
6, 10 & 13 inch Superior McCullys.

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100 K.W. RIDGWAY 3/60/2200-250-275 volt.
150 K.W. GEN. ELEC. 3/60/2200-250-275 v.
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52 H. P. GEN. ELEC. 3/60/440 v., 1200 rpm.
(3) 100 H.P.GEN.ELEC. 3/60/440v.,900-1200 rpm.

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BELT: 1000 Ft.60 In., 700 Ft.40 In., 600 Ft.36 In., 800 Ft.30 In., 1642 Ft.24 In., 517 Ft.20 In., 297 Ft.18 In., 500 Ft.16 In., 200 Ft.14 In.
IDLERS: 54 In..42 In..36 In..30 In., 24 In..20 In..18 In..16 In. & 14 In.
Head & Tail—Pulleys—Takeup for all sizes.
Steel Frames: 2,000 Ft. 24 In..30 In. & 36 In. Sections.

ROTARY DRYERS AND KILNS
36 In.x20 Ft..3 Ft.x30 Ft., 4 Ft.x30 Ft., 54 In. x 30 Ft., 42 In.x24 Ft., 5 Ft.x30 Ft., 5 Ft.x16 Ft., 5 Ft.x60 Ft..6 Ft.x60 Ft..6 Ft. x 20 Ft., 6 Ft.x70 Ft..10x20, 7½x100 & 8x110 Ft. Kilns.

STEEL DERRICKS
GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom. 15 Ton 100 Ft. Boom,25 Ton 100 Ft.Boom,75 Ton 135 Ft.Boom.

LOCOMOTIVES
GASOLINE: 3 Ton,5 Ton,8 Ton,12,14,and 30 Ton.
STEAM: 9 Ton,20 Ton,40 Ton,60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 40 Ton.
DIESEL: 4, 8 & 15 Ton.

SCREENS
VIBRATING: 2x4, 3x5, 12x8, 3x8, 3x5, 4x5, 4x8, 4x10, 48x72 & 4x12, 1, 2 & 3 Deck.
HUMMER, ROTEX, NIAGARA & ROBINS.
REVOLVING: 312, 3x16, 3½x18, 3x24, 4x16,4x20, 4x22, 4x24, 5x30, 5x20, 6x20.

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From
SALT LAKE CITY, UTAH

2—Miles of 55 lb. Railroad Track.
1—Davenport 18 ton Saddle Tank Locomotive, 36" ga.
1—Brookville Gasoline Locomotive, 36" ga.
14—Standard (Western) 4 yd. Dump Cars.
1—30" Feed Belt Conveyor, with 8' x 11' hopper and grizzley.
1—Two Roll spike roll Crusher.
2—18" x 100' Troughing Belt Conveyors.
2—Eimco Classifiers, single and double rake.
1—Stephens Adamson Redler Conveyor.
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5—Steam and Duplex Pumps.
15—Motors, 3 to 100 HP, 3/60/220-440 volt.
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1—Battery of 2—250 HP Boilers.
1—Hamilton Engine Generator Set, 360 KW, 3/60/480 volts.

MISCELLANEOUS: Small Tools, piping, valves, fittings, steel plate, etc.

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SPECIALS

1—BONNOT ROTARY DRYER 6' x 70', ½" SHELL, COMPLETE WITH SUPPORTING AND DRIVING MECHANISM.
1—Kennedy Van Saun 8' x 12' Air Swept Tube Mill, with 90" fan, 9' and 13' cyclones.
1—Jeffrey Type "A" 24" x 36" Hammer Mill.
1—Jeffrey Type "A" 18" x 24" Hammer Mill.
1—Rotary Dryer, 3' x 25', stainless steel shell, with extra chrome iron shell, practically new.
1—Dryer, 5' x 35'.
1—Denver 36" x 16" Crushing Rolls.
3—Tyler Hummer Screens, 3' x 5', 4' x 5'.
1—Raymond Roller Mill, 4 roll, high side.
1—Raymond No. 1 Impact Mill, motor driven, with cyclone and tubular collector.
1—Rotary Kiln, 4' x 40'.
1—Rotary Kiln, 4' x 30'.
1—Rotary Dryer, 3' x 20'.
1—Rotary Dryer, 3' x 18'.
1—Rotary Kiln, 8' x 84', ½" shell.
16—Jaw Crushers, 3" to 5" to 84" x 56".
14—Hammer Mills, Williams, Jeffrey, Gruendler, American, JayBee, from 5 to 100 HP.
10—Steel Bins, 10 to 100 tons.
25—Centrifugal Pumps, 2" to 6".
3—Tube Mills, 4' x 16', 5' x 22'.
1—Raymond No. 00 Screen Mill, motor driven.
6—Oliver Rotary Filters, 3' x 2' to 11' x 8'.
6—Dorr Thickeners and Classifiers.

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Available For Immediate Delivery

Eight Horizontal Rotary Kilns 7'x60' with tapered extension with 15' long and 5' diameter discharge end, supported by three standard tires with trunion supports and driven by girth gear with pinion and intermediate reduction for belt drive.

Two Abbe (Smidth) lined Ball Mills, 4'6"x18', supported by tires and their trunnions and driven by girth gear for pulley drive and available with 75-HP 3-phase 60-cycle 440-volt 720-RPM motor.

One Allis-Chalmers lined Ball Mill 4'6"x20', lined and supported by customary tires with their trunions and driven by girth gear and pinion and intermediate reduction for belt drive.

One Allis-Chalmers double roll Crusher, rolls 12"x24", arranged for belt drive.

One Tyler-Hummer Vibrating Screen with 3'x5' surface with motor driven Generator.

One Battery of Tyler-Hummer Screens consisting of 1—No. 32 Screen 4'x5', 2—3'x5' and 1—3'x5' together with motor driven Generator.

Send for complete descriptions and quotations

FIRST MACHINERY CORP.

819-837 East 9th St., N. Y., N. Y.

CRUSHERS

GYRATORY: 42" Gates K. 30" Superior McCully (Like new). 20" Superior McCully, Gates Nos. 12, 10, 9, 8, 7½, 6, 5, 4, 3, 2, 1 (75 avail.) Telsmith Nos. 4, 5, 6, 8C, 9 & 16. Also many Austins, Kennedys and Traylors, many sizes.

JAW TYPE: Traylor 60x84, 48x60, 42x48, 24x72. Superior 84x66 & 24x36. Buchanan 30x42, Farrel 60x42, 30x36, 24x36, 18x36, 12x24. Good Roads 1030. Acme 24x40. Misc. 7x12, 9x16, 8x20, 8x24, 12x24, 9x36, 9x30, 15x36.

REDUC. TYPE: Kennedy Nos. 25, 37 & 49. Telsmith 3-F & 40. Traylor 36" TZ, 8", 10", 12". Super. McCully 6" & 10". Newhouse 5, 7 & 10". Symons Cone & Disc Ty. 2' to 4'.

ROLLS: Allis-C. 12¼x12, 36x10, 40x15, 54x24 & 72x30. Fairmount 36x60 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16. Etc., Etc.

HAMMERMILLS: Williams No. 1, 2, 3, 4, 5 & 9. Jeffrey 36x18 & 36x42. Day Nos. 20 & 40., Etc.

MILLS: Kennedy Ball 4x6, 5x6 & 5x8. Marcy 8x6 & 10x9. Hardinge 6'x3', 8'x30' & 6'x9'. Misc. Tube Mills 5' & 6' x 22'. Sturtevant Ring Roll, Raymonds, Kents, Fuller-Lehigh, Etc., Etc.

CRUSHING PLANTS: No. 65 Diamond No. 22 Pioneer 8x24. 1620 Good Roads, 9x40 Austin-Western, 9x36 C.R.

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ALEXANDER T. McLEOD

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(NEW)

(1) Gruendler 10 x 16 Roller Bearing Jaw Crusher.
(2) 24 x 18 Pulverizers.
(1) 30 x 24 Pulverizer.
(1) 32" Single Cage Gravel & Stone Crusher.
(1) 42" Fine Grinding Ring Roll Mill.
(1) 42 x 36 Pulverizer.

(USED AND REBUILT)

(1) Gruendler 15 x 24 Plain Bearing Blake Type Crusher.
(1) Day Model 101 Type K Limestone Pulverizer.
(1) 24 x 18 Pulverizer with Apron Feeder.
(1) Factory Rebuilt (in original crate) LeRoi RAP2, 65 H.P. Gasoline Engine.

All Subject to Prior Sale

Write:—

CRUSHER SERVICE, Box 795, St. Louis, Mo.

CONSTRUCTION TYPE ELECTRIC LOCOMOTIVES

2—4 Ton WESTINGHOUSE, 250 V., 36" Ga., Equipped with 902-C Motors, and complete with Motor Driven Cable Reels.

WALLACE E. KIRK COMPANY

4th Ave. & Grant St. Pittsburgh, Pa.

DRYER or KILN

1—7' dia., 55' long, Vulcan made up ⅝" plate, complete, new condition, suitable for use as Dryer or Kiln.
1—5' x 28' ft.

GYRATORY CRUSHERS

All standard makes Size No. 4, openings 8 x 30 to Size 21, openings 42 x 134".

JAW CRUSHERS

8 x 16 up to and including 60 x 84.

CRUSHER SPECIALS

1—Allis Chalmers 24 x 36, used only three months.
1—Symons 2' and 1—4' Cone Crushers, coarse bowl.
1—Buchanan and 1—Farrel 13 x 30.
2—Traylor 12" x 16" gyratory.
2—Allis Chalmers 6" and 10" Superior.
1—Telsmith 16-A Crusher.
1—Acme 14 x 26 Crusher.
1—New Holland 7 x 12".

LOCOMOTIVES, STEAM AND GAS

2—65 ton, 6 wheel, Switchers with tender.
1—American 40 ton, 4 wheel, std. gauge, saddle tank, cylinders 14 x 22, 190 lbs. working pressure, ASME boiler. For Rent Only.
2—Vulcan 32 ton, 4 wheel, std. gauge, saddle tank, air brakes.
1—Vulcan 21 ton, steam air brakes, std. gauge.
1—Plymouth 8 ton, gas.

SHOVELS AND CRANES

1—Electric Shovel with 3 yd. or 4 yd. dipper.
1—Northwest ⅝ yd. Shovel and Crane, 45' crane boom and fairleads.
1—2 yd. Steam, full revolving, crawler tread.
1—General ½ yd. Crane, 35' boom.

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1—Two drum Lidgerwood Cableway Hoist powered with 100 h.p., 220 volt, 60 cycle 3 phase electric motor, controller, bank levers, drumspeed 750 ft. per min., wood block frictions. 2" Track cable, carriage double load block, anchors, takeups and all parts for cableway. Suitable as cableway for quarry. EXCELLENT CONDITION.

Mississippi River Sand & Material Co.

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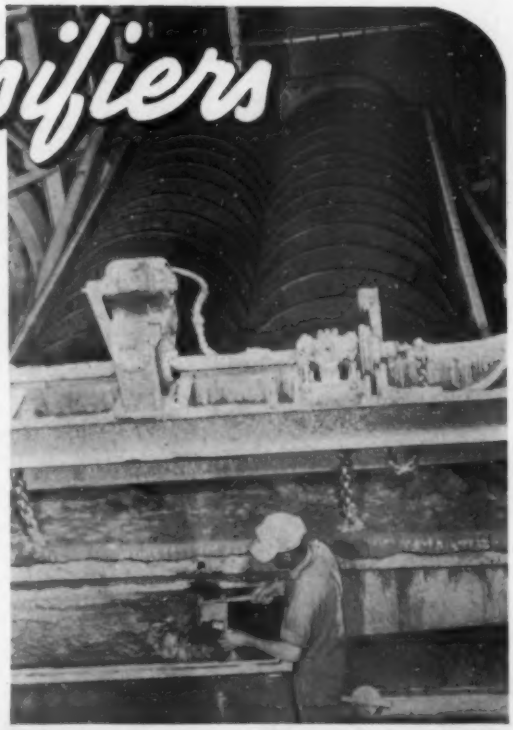

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